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THE

SEAMAN'S GUIDE

ROUND

JAVA,

TO

THE ISLANDS EAST OF JAVA,

AND THROUGH THE

STRAITS OF BANCA AND GASPAR.

By BARON MELVILL OF CARNBEE,

AND

H. D. A. SMITS,

LIEUTENANTS IN THE DUTCH ROYAL NAVY.

THIRD EDITION.

LONDON:
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1853.

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ADVERTISEMENT.

It is well known that the old Dutch East India Company were zealous promoters of geographic discovery, and that led on by national ambition as well as by commercial energy, there was no part of the Eastern Ocean that was not traversed by their enterprising navigators. The able instructions by which those bold seamen were guided may still be studied with pleasure and profit, and the brilliant exploits which they achieved might well be emulated even now. Of one of them it has been emphatically said by the celebrated Russian Admiral Krusenstern, "Abel Tasman was certainly the greatest captain of the seventeenth century."

"How mortifying, then, to the descendants of such men," says the author of the following work in his preface, "to find such an abatement in our ancient skill or public spirit as to be indebted to Horsburgh and to hydrographers of other countries for Sailing Directions and Charts of our own possessions in those seas."

Touched by these considerations, Baron Melvill, an officer of the Dutch Royal Navy, was induced to undertake the composition of "The Seaman's Guide round Java;" and personal experience, a sound judgment, and the numerous observations he had made while on service there, appear to have eminently fitted him for the task. Nor were other materials wanting, for in 1821 Van der Capellen, the enlightened Governor-General of Dutch India, had instituted a commission at Batavia for the collection of nautical information; and he decreed also that at least one vessel of war should always be employed in surveying the coasts and harbours of the whole archipelago over which he presided, in fixing the positions of the numerous shoals and dangers with which it is studded, and in acquiring a fuller knowledge of its singular tides.

The result of Baron Melvill's labours is the present work, which will not only confer lasting credit upon the author, but the value of which will be gratefully acknowledged by every future visitor to the ports and waters of Java.

When preparing it, in this office, for the press, it was generously and carefully revised by the Baron at the request of Count Schimmelpenninch, His Netherlands Majesty's Minister here; and its being translated into English by Lieutenant G. Tichelman, another accomplished officer of the Dutch Royal Navy, will give it an additional claim to the confidence of the public.

The accompanying charts of Java and of the neighbouring islands, were constructed by Mr. Jacob Swart, the eminent and erudite hydrographer of Amsterdam, either from actual surveys, or from the most trustworthy sources that could be obtained.

The second work contained in this volume, "The Seaman's Guide to the Islands East of Java," is from the pen of Lieutenant H. D. A. Smits, D. R. N. He seems to have availed himself of every source of information within his reach; and his descriptions of that chain of islands, however brief, his directions for the channels between them, and his judicious hints about the monsoons and currents cannot fail of being highly useful when crossing that imperfectly explored region. He published it at Batavia, both in Dutch and in English, in 1848, and from the latter version the present copy has been made, without any alterations, except occasional corrections of the idiom.

With respect to the *names* of places, it will be seen that several of them differ from those of our former English charts, but the sound general law has been adopted of allowing every country to give its own appellatives to its own territories, and therefore those found in the Dutch charts have been everywhere retained, except when united to the confusing Malay words, Tanjong, Goenong, Noesa, &c., for which the more intelligible expressions of Cape, Mountain, and Island have been substituted.

F. B.

Hydrographic Office,
25th of September 1850.

ADVERTISEMENT TO THE SECOND AND THIRD EDITIONS.

To these Editions of the Java Guide have been added Sailing Directions for the Straits of Banca and Gaspar, drawn up by Lieutenant H. D. A. SMITS, D.R.N., the author of "The Seaman's Guide to the Islands East of Java." They were first published at Batavia in 1847, by the Committee for improving the Indian Charts, and have now been translated for this work by Doctor NORTON SHAW, Secretary of the Royal Geographic Society.

Hydrographic Office,
March 1, 1853.

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ERRATUM.

Page 220 in the Margin,—under *Alligator*, insert *Bay*.

IN THIS WORK THE BEARINGS ARE ALL MAGNETIC, EXCEPT WHERE MARKED AS TRUE.

THE DISTANCES ARE EXPRESSED IN SEA MILES OF 60 TO A DEGREE OF LATITUDE.

A CABLE'S LENGTH IS SUPPOSED TO BE EQUAL TO 100 FATHOMS.

SAILING DIRECTIONS

FOR

THE ISLAND OF JAVA.

CHAPTER I.

The Strait of Sunda, South Side.*

1. Vessels coming from Europe and bound to the Strait of Sunda, in the eastern monsoon, should be careful not to edge away too quickly to the northward, but to reach first as far to the eastward as the meridian of Java Head, into the south-east trade wind. *Eastern Monsoon.*

2. During this monsoon, *i. e.* from March to September, the longitude of 102° E. seems to be a proper place for crossing the southern tropic; and about this period a westerly current will be experienced along the south coast of Java. In the months of June, July, and August, this westerly current is strongest, and in the vicinity of Java the S.E. monsoon veers sometimes to E. or E.N.E.; it is therefore indispensable at that time to be well to the eastward, as a ship will be liable otherwise to fall to leeward of Java Head. A ship will make a quicker passage when once in the S.E. trade by bringing Java Head north, and the loss of time occasioned by this deviation from a straight course will be fully compensated, should the wind come from the northward of east. Formerly ships used to make the land still farther to the eastward, but since we may now trust to the general correctness of chronometers, it is sufficient to make Java Head or Klapper Island the first land-fall.† *Landfall.*

3. In the season called the western monsoon, generally estimated to be from September to March, but especially in the months of December and January, vessels bound to the Strait *Western Monsoon.*

* *See* Charts of Java Island and of Sunda Strait.

† Poulo Klapa, or Claps Island, in Horsburgh's chart of Sunda Strait.

of Sunda should cross the southern tropic some degrees more to the westward than the meridian of Java Head, by which they will be enabled to steer direct for the Strait, or to make Engano Island, or the land at Flat Point, the southern extremity of Sumatra. Great care is recommended, during the strength of the western monsoon, not to fall to the eastward of Java Head, because the westerly winds blow often with great violence along the southern coast of Java, with strong currents setting to the eastward, which by their united strength make it impossible for a ship to beat up along this coast. A great many ships have been compelled to steer to the southward, re-enter the S.E. trade, and there make westing sufficient in order to fetch Flat Point, or at least the middle of the Strait.

4. If a ship bound to the Strait should chance to fall in with contrary winds in the months of November, December, or January, shortly after leaving St. Paul and Amsterdam islands, she may steer north, keeping good full, and cross the tropic anywhere between the longitudes of 80° and 90° E., by which track she will very soon meet with westerly winds, and be speedily carried to her destination.

Shifting Months of the Monsoons.

5. During the shifting months of the monsoons, as in September and October, you will not always meet with westerly winds, nor in the months of March and April with easterly winds, but sometimes quite the contrary; for which reason it is advisable to make sufficient easting in the S.E. trade, so as to bring Java Head nearly north. Then steer right for it, and when getting sight of the land, keep a little to the east or west, according to circumstances.

Princes Channel.

6. Having made Sunda Strait as above directed, in the east monsoon, it is preferable to proceed through Princes Channel or Behouden Passage, because experience proves that generally a south-easterly wind prevails there; and besides, if a ship should be becalmed there with a westerly current she may anchor. When past the Friar, she may steer for Mew Island, where good anchorage will be found in moderate depths. When proceeding through the Great Channel, to the north of Princes Island, a ship is liable to be driven out of the Strait, if she has the misfortune to fall in with baffling winds or calms, which occur even in the strength of the eastern monsoon, and occasion a great deal of trouble. Under all circumstances, in this monsoon, it is advisable, when a ship enters the Strait by the Great Channel,

Great Channel.

to keep close toward Princes Island ; and, farther up, to remain on the Java side, which is not so much exposed to the westerly current, and comparatively free from dangers but such as are discernible with a good look-out.

7. Java Head, the western extremity of Java, is in latitude 6° 46′ 40″ S. and longitude 105° 15′ 15″ E. of Greenwich, or 1° 36′ 45″ W. of Batavia, by accurate chronometric observations. It is a bluff promontory at the foot of the high land, and is discernible at a considerable distance in clear weather. From Java Head the coast runs in a direction of S. by E. $\frac{3}{4}$ E. for 5 or 6 miles, to Palembang Point, which is not far from Cape Sangian Sira, the most southern point of this part of Java. From this cape, which lies in latitude 6° 52′ S., and longitude 105° 17′ 20″ E., and a mile to the southward, several rocks project, some of which are above water, and consequently easily discovered. The water is very deep close to these rocks ; and along the shore, as far as Java Head, there is in most parts no bottom with 100 fathoms ; but the breakers, which line the whole coast, seem to indicate that there are rocks under water, on account of which it is not advisable for a ship to run close in-shore, but to give it a berth of at least 2 miles. *Java Head.* *Palembang Point.* *Cape Sangian Sira.*

8. From Cape Sangian Sira the soundings decrease in the direction of Klapper Island to 40 and 20 fathoms, while between this island and Trowers Island, situated more to the eastward, they decrease from 20 to 12 fathoms.

9. Klapper Island, or in the Malay language Poulo Deli, and also called Breakers Island, is very low and covered with large trees, and along the beach only there are cocoa-nut trees. Its centre is in 7° 0′ 20″ S., and 105° 34′ E., by chronometers ; it lies 8 miles distant from the nearest shore of Java, and about 6 leagues E.S.E. from Cape Sangian Sira. It is surrounded by a reef, which in many places stretches off a mile ; but on the north-west side there is a good watering-place, as the boats can enter a little river, through a channel, with reefs on both sides, and the ships may anchor in 18 to 24 fathoms clay bottom, 2 miles distant from the island, close to those reefs which partially dry at low water. According to Captain F. H. Ampt, of the Dutch Royal Navy, this is a good watering-place in the eastern monsoon. The depths are from 30 to 40 fathoms to the southward of Klapper Island, 4 miles off-shore. *Klapper Island.*

Trowers Island.

10. Trowers Island, or Poulo Tinjil, is nearly of the same circumference and outward appearance as Klapper Island, and lies E. b. N. 12 miles distant from it. This island is also surrounded by a reef. According to the natives there is a fresh water spring, but Captain Ampt, after a most arduous search, could not discover it. On the north and west sides of this island there are from 13 to 19 fathoms water, and at the south-east and south sides, at some distance, no bottom with 50 and 100 fathoms line. Captain Klein, who lost the "Cheriton" here in 1847, reports that, a mile to the northward of the island, there is a rock on which the native *proas* have sometimes struck. Everywhere else round the island from 13 to 19 fathoms will be found, and at a short distance to the southward more than 100 fathoms.

Along the coast to the northward of these islands as far as Cape Sangian Sira, there are rocks, which in some places lie $1\frac{1}{2}$ and 2 miles off; and it affords no shelter whatever with S.W. and S.E. gales. Lieut. B. G. Escher, D.R.N., discovered a shoal there, in 1837, $1\frac{1}{2}$ miles from the shore, and just to the eastward of Sodon Point: it bears N. $\frac{1}{2}$ E. from the east point of Klapper Island, and N.W. b. W. $\frac{7}{8}$ W. from the west point of Trowers Island. When making Java Head with hazy weather, the appearance of the land to the eastward of Cape Sangian Sira, between it and the high land of Sodon Point, bears much resemblance to the high land of the west point of Java, with the adjacent hills on Princes Island; for the low land in such circumstances is not distinguishable at a distance, and it is therefore often mistaken for the entrance of the Princes Channel.

Sodon Point and Shoal.

First Point.

Friar Rock

11. When steering for Princes Channel, and getting near Java Head, very soon First Point, or Cape Along Ajang, will be seen with a conspicuous rock above water, lying abreast of it. This rock, called the Friar, bears N. $\frac{1}{4}$ E., $2\frac{1}{2}$ miles distant from Java Head, and rises suddenly and steeply out of the sea, so that a ship is enabled with a steady wind to pass it on either side at a very short distance. At some distance to the northward of First Point there is another rock above water, which, together with the former, are properly called the Friars. The position of this easternmost rock was carefully determined, in 1841, by Lieuts. T. A. G. Rietveld and E. H. Boom, of the Dutch Royal Navy, who placed it in 6° 44′ 13″ S., and 105° 15′ 40″ E.,

Princes Channel.

or 1° 36′ 20″ W. of the time ball at Batavia.* Princes Channel is 4 miles wide at its entrance, and bounded on the north side by the south point of Princes Island, from which project the rocks called the Carpenters, being about a mile in extent, generally covered by breakers, and mostly above water. Close to these rocks there is no bottom with 50 fathoms, but farther up the Strait, in a N.E. or N.E. b. E. direction, there are from 50 to 30 fathoms, which soundings decrease towards Mew Bay to 20 fathoms and less. In this passage it is advisable to keep at least a mile distant from the south-east coast of Princes Island, on account of a reef that projects to some distance from the S.E. point, and also of a coral rock, which lies 2 miles to the westward of it close in shore, and always discernible by its breakers, and by a conspicuous white rock near it.

in the West Monsoon outward bound.

12. It often happens that a ship outward bound, in the west monsoon, gets very quickly to the westward by proceeding through Princes Channel, while other ships are detained by heavy squalls and adverse currents to the northward of the island. Indeed, some instances have occurred in which ships have worked through this passage in a remarkably short time in a westerly gale, by carrying a heavy press of sail, and

* The determination of the position of this rock is interesting, because that of Java Head was deduced from it; and especially because those points have been laid down in other charts and descriptions some minutes more to the eastward. H.N.M. schooner Krokodil, under command of Lieut. Rietveld, was provided with two excellent chronometers, which were rated with the greatest care at St. Nicholas Point. On the 9th of August this vessel left that point, and on the 13th the position of the East Friar was determined with an artificial horizon on the rock itself. By four observations he found that the first chronometer gave—

°	′	″
0	50	19
0	50	13
0	50	20
0	50	16

and the second

°	′	″
0	50	23
0	50	30
0	50	33
0	50	33

west of St. Nicholas Point.

The mean of 50′ 23″ is the meridian distance of this point by the trigonometric survey of Lieut. Staring, D.R.N., in 1841, being 45′ 57″ W. from Batavia; we conclude the longitude of the East Friar to be 1° 36′ 20″ W. of the time ball at Batavia, or in 105° 15′ 40″ East of Greenwich. The Krokodil returned to St. Nicholas Point the 19th of the same month, to examine if the rates of the chronometers had altered, when the first chronometer showed 18″ of arc too much westerly, and the second chronometer 10″ of arc easterly, of which the mean is 4″ of arc; and dividing this by 10 days it is comparatively of no value. The position formerly given of Java Head was, viz.:—Lat. 6° 48′ 0″ S., long. 105° 11′ 0″ E.; whereas its correct position is lat. 6° 46′ 40″ S., long. 105° 15′ 15″ E.

Princes Channel.

tacking between the squalls, at times when it was impossible for any ship in the great channel to beat up against the heavy sea and current. When proceeding by this passage, however, a ship should keep as close as possible to the south point of Princes Island and the Carpenters, to avoid being set upon the rocks near Java Head and Palembang Point by the heavy swell, for being once outside the Strait there is no anchorage, and in a calm a ship would have much trouble to get clear of the coast of Java.

Princes Island.

13. Princes Island, or Poulo Panaitan, is the largest island in the Strait, extending 10 miles north and south, and the same distance east and west. The middle and eastern parts are hilly, but it is very low on the western side in some places fronting the sea. The highest peak is on the eastern shore of the island, in 6° 35′ 40″ S., and 105° 17′ 40″ E., and N. b. E. from the Friars, according to Lieut. Rietveld's observations in 1841. The west point of Princes Island lies in 6° 36′ 20″ S., and 105° 8′ 40″ E.; and the north point in 6° 30′ 35″ S., and 105° 19′ E. Casuaris Bay, on the south-west side, is 4 miles deep, and has at its entrance soundings varying from 30 to 50 fathoms, decreasing inside to a convenient depth for anchoring. This bay being open to west and southerly winds, is not frequented and cannot be recommended. From the west point a reef extends about 1½ miles, several rocks of which are seen above the surface of the water. On the north-west and north sides Princes Island is steep-to, and on the east side there are from 40 to 50 fathoms a mile off-shore. According to Horsburgh there is a run of fresh water here at the east side of a small sandy bay. Ships may anchor in 35 fathoms soft ground, at the distance of half a mile off-shore, with the peak bearing about N.W. b. N. It is only in the west monsoon that water can be procured, for in the south-east monsoon nearly all the springs are dry, from the want of rain; and there is no comfortable anchorage in this monsoon along the east side of Princes Island, as it is a dead lee-shore.

Casuaris Bay.

Mew Island.

14. Mew Island,* or Poulo Kanti, lies 3 miles east from First Point; it is nearly 2 miles north and south, and one east and west; it is hilly and abounds with wood. Between First Point and Mew Island, a small island or rock above water lies

* Also called Nieuw Island in some old charts.—*See* Plan of the island.

close in shore, called the Mew Stone. Betwixt Mew Island and the main there is a narrow but safe channel, with depths from 10 to 5 fathoms, sandy bottom. When taking this passage keep close in towards Mew Island, as a shoal lies near the Java shore, called the Watson Bank. Sometimes the sea breaks upon this bank, but between it and Mew Island there are 3, 5, and 10 fathoms, clay bottom. *Mew Channel.* *Watson Bank.*

To the eastward of Mew Island, on the Java shore, there is a good watering place in the south-east monsoon; the water is excellent, and is poured by a cataract upon the beach. Long-boats may approach this spot at high-water through a narrow channel in the reef, and fill the casks by a hose. A little to the northward of this place there is a coral rock, about a cable's length in extent and about half a mile from the Java shore; upon its shoalest part there is 1 fathom water, and all round from 5 to 6 fathoms. A ship standing in for the watering-place must, to clear this rock, steer between it and the island, or rather nearer towards the island, and anchor in 9 or 10 fathoms. In the south-east monsoon there is also a good anchorage a little further out, with the north point of Mew Island about W. $\frac{1}{2}$ S., and the east point S. b. W., in 16 to 19 fathoms water, sandy bottom. *Watering-place.* *Sunk Rock.* *Anchorage.*

From Mew Island towards Second Point, reefs project half a cable's length from the shore, having very near them 5 to 6 fathoms water, which increases speedily to 10 and 20 fathoms; but with due care and attention to the lead, a ship may approach the shore in order to anchor. On the coast there is scarcely any population, but sometimes proas come from Princes Island to offer turtles, fowl, and cocoa-nuts for sale. Horsburgh says that the natives are not to be trusted, and that a shore party ought to be on their guard against any hidden assault.*

15. Second Point, or Cape Goekoelang, consists of a low foreland, somewhat broad in appearance; the point is in 6° 38′ 15″ S. and 105° 25′ 13″ E., or 1° 26′ 47″ W. from Batavia. From thence the high peak of Princes Island bears W.N.W. $\frac{1}{4}$ W.; the north point of that island, N.W. $\frac{1}{2}$ N. and the peak of Krakatoa N. $\frac{3}{4}$ E. *Second Point.*

Second Point may be approached without danger to the distance of one or even half a mile, and in from 26 to 20

* Princes Island at present seems to have no inhabitants.

fathoms water, the reefs projecting but a little way off-shore. From thence to Third Point the course is N.E. b. E.; but in passing Welcome Bay take care not to borrow into it farther than to have Second Point bearing west, to avoid the reefs which lie between Second Point and Plaggan, or False Point.

Welcome Bay. 16. Welcome Bay is 12 miles wide at its entrance, and of the same extent in-shore. In the south-east monsoon this bay affords good shelter, but should be avoided in the western monsoon.* Its numerous islands and shoals were surveyed in 1841 by Lieuts. Rietveld and Boom, and determined as follows:—

Panter Reefs. Panter Reefs are the northernmost of the dangers, and lie at the distance of 6 miles from Second Point. They consist of four different patches in a N.N.E. and S.S.W. direction from each other, the whole being from half to three-quarters of a mile in length; the shoalest patch has $1\frac{1}{2}$ fathoms water, rocky bottom, but betwixt and close round them there are 9 and 10 fathoms mud. These reefs are very dangerous, as the sea does not often break upon them, although usually they may be distinguished by the discoloration of the water. Few of the English charts mention these reefs; Capt. de Vriese discovered them in 1840, having nearly run upon them in H.N.M. brig Panter. From their northernmost extremity in 11 fathoms, Second Point bears W. $\frac{3}{4}$ N., the east point of Andellan Island S. b. W. $\frac{1}{4}$ W., and the south-west point of Baddoe Island S.E. $\frac{1}{2}$ S. East and west of these reefs are 17 and 18 fathoms water, and to the northward 20 and 25 fathoms. In a W.S.W. direction, half way

Rocky Ridge. to the shore, lies a large reef mostly above water, and always covered by breakers, by which it is distinguished at a great distance. That part of it which remains dry at low water is about the length of 100 yards, and the breadth of the surrounding reef the same, the soundings very near which are 10 and 12 fathoms, increasing at some distance to 18 and 19 fathoms. From the ridge, Second Point bears N.W. b. W. $\frac{3}{8}$ W., the south point of Baddoe Island S.E. b. E. $\frac{3}{4}$ E., and the east point of Andellan S. $\frac{1}{2}$ E. The west side of Welcome Bay is skirted by reefs, some parts of which are a mile distant from the shore, and from thence

Little Andellans. to the Little Andellans the depth is 10 to 8 fathoms. About 2

* According to Lieut. Boom, D.R.N., there is a safe anchorage in Welcome Bay, in the western monsoon, when the wind is not too northerly, behind Second Point in 9 or 10 fathoms.

miles north-west of these islands, the beach forms a large hook, with 4 fathoms at its entrance, but farther in only one fathom. N.N.E., E., and S.E., of the Little Andellans, at the distance of a half to three-quarters of a mile, there are three sandbanks above water, each of which is surrounded by a reef under water; and farther up in the bay a fourth bank. Between these banks and Andellan there are from 4 to 6 fathoms, mud, and between that island and the shore from three-quarters to $1\frac{3}{4}$ fathoms. The southern shore of Welcome Bay lies in latitude 6° 47′ S., and the distance across to the south coast of Java is there not more than 3 miles, though represented in all former charts fully 12 miles; indeed the sound of the surf on the south coast may be distinctly heard across the isthmus. Between Baddoe, which is surrounded by a small reef, and the projecting point of Tankyngi, are a great many coral rocks, which are for the most part dry at low water, with from 7 to 9 fathoms depth between them. W. $\frac{1}{2}$ N. $1\frac{1}{2}$ or $1\frac{3}{4}$ miles from Baddoe lies a large coral rock above the water, covered with a heavy surf, and appearing of a bright white colour; between this rock and the island there are from 6 to 12 fathoms water. Farther to the N.E. there are some islands near Plaggan Point; the southernmost is called Mangir, and the others are named in former charts the Brothers, or Poulo War, Oemang, and Soemoer. These islands, as well as Plaggan Point, are surrounded by reefs, a cable's length in breadth, but at the distance of a mile outside there are 15 fathoms, over a mud bottom. From Plaggan Point to Third Point the coast leads in a N.b.E. and northerly direction, and the depths are from 15 to 22 fathoms water, at some distance from the shore.

Andellan Shoals.

Baddoe Island and Reefs.

Islands near Plaggan Point.

17. Third Point, or Cape Lussong, is in 6° 26′ 45″ S. and 105° 42′ 33″ E., and, like Second Point, is very low, although sharper, and surrounded by rocks to the distance of 2 cables' lengths outside, from which the depths increase to 10 and 18 fathoms.

Third Point.

From this point, the peak of Krakatoa bears N.W.b.N.; Mount Karang (the highest hill in this part of Java), N.E.b.E. $\frac{3}{4}$ E.; Papolle Island, N.E.b.E. $\frac{1}{2}$ E.; and the north point of Lawvengan Island, E.S.E. $\frac{1}{2}$ E.

18. To the eastward of Third Point, Pepper Bay extends 8 miles east and west, and 4 miles to the southward. In the

Pepper Bay.

eastern monsoon a safe anchorage is found N.E. of Lawvengan, in 6 or 8 fathoms depth, soft ground; but there are two dangerous reefs in this bay, viz.:—A coral bank 2 miles east from Third Point, the greater part of which is above water, and readily distinguished by its bright white colour; the direction of this bank is S.E.b.E. and N.W.b.W., about 3 cables in length, and from it Third Point bears W. ¼ S., the N.E. point of Lawvengan S.E. ½ E., and the west point of Papolle N.E.b.E Between this bank and Third Point there is a channel with from 4 to 9 fathoms water, and the depths increase speedily from 7 to 15 fathoms, at the distance of a mile. The second danger is a ledge of rocks, named Paniang, 1½ miles S.W. from Papolle Island in a N.N.W. and S.S.E. direction, a mile long, and half a mile in breadth; the shoalest water upon this reef is half a fathom, and on some parts of it 1 to 3 fathoms are found. This ledge is very dangerous, as the sea does not often break upon it, and as it cannot be approached by the lead, the depths very near it being 6 and 7 fathoms; but by keeping a good look out it may be distinguished by the light colour of the water, and its brown patches. Between the reef and Papolle Isle, the soundings are from 7 to 4 fathoms, mud bottom, and at the E. and S.E. sides of the reef, 5 to 3 fathoms, towards the shore; its north-westernmost point bears W.S.W. ½ W. from the north-west point of Papolle. The Isle of Papolle is connected with the shore by a reef, through which, however, there is a 1½ fathoms channel, fit for the navigation of proas. Three-quarters of a mile N.W. and W. of Lawvengan Isle, there are also two reefs, partly dry at low water, and usually breaking; the rocky margin of this island projects farthest at the North side, where it reaches the distance of 1½ cables' lengths. To the southward and mid-channel between Lawvengan and the shore, lies a reef with only half a fathom water on it, between which and the island there is a small channel with 3 and 4 fathoms; but between it and the shore are several small coral reefs, that dry at low water.

Coral Bank.

Paniang Reef.

Papolle Isle.

Lawvengan Isle.

The soundings in Pepper Bay generally decrease uniformly from 14 to 10, 5, and 4 fathoms; the latter depth will be found 2 miles off shore.

19. With a steady and commanding breeze a ship may steer from Third Point, a N.N.E. course right for Thwart-the-way;

very often however the winds become variable there, and will compel her to anchor, in which case a N.N.E. course leads too far from the shore. For these reasons it is better to keep on the Java shore with a N.E. course, avoiding however the above-mentioned banks and reefs in Pepper Bay, and which should not be approached nearer than 13 fathoms.

Tyringin Reef.

20. Two miles north of Papolle Island, lies a coral reef, two-thirds of a mile off-shore, near Tyringin, partly above water, and generally breaking; this reef stretches half a mile in a N.N.E. and S.S.W. direction, and is very steep, having close to it 6 fathoms water, outside, increasing to 9, 12, and 15 fathoms at 2 miles distance from the shore. Between the reef and a small rock near the shore, there is a channel with 3 fathoms depth, often used by large proas. If a ship intends to touch at Tyringin, a convenient anchorage will be found to the northward of this bank, at $1\frac{1}{2}$ miles distance from the shore, with Papolle bearing S. b. E., and the Flag-staff E. b. S. or E.S.E. in 7 fathoms clay bottom. From Tyringin the coast runs N. b. E. and N.N.E., and may be approached, with due attention to the lead, to 2 miles distance, in 18 fathoms, without any danger of striking the Catharina Bank, which lies about 4 miles south from Fourth Point, and half a mile off-shore. This bank was surveyed, and ascertained to be 25 fathoms in length, in a N. b. E. and S. b. W. direction, with some rocky points even with the water's edge, and in other places with only half a fathom water. With a little breeze the sea breaks upon this bank; outside of it are 4 fathoms water, increasing to 10, 14, and 18 fathoms, the latter depth being within a mile of it, while the channel between it and the shore has $3\frac{3}{4}$ and 4 fathoms, and is used by proas. From outside this bank, Fourth Point bears N.N.E. $\frac{1}{2}$ E., Krakatoa Peak west a little southerly, and the west point of Thwart-the-way N. $\frac{1}{2}$ W.

Anchorage near Tyringin.

Catharina Bank.

Current and Eddy.

21. When the current is running to the westward in the middle of Sunda Strait, an eddy will be experienced near the land, besides which, a vessel may be anchored anywhere along the shore, except near Fourth Point, where the bottom begins to get foul and rocky. When beating up, therefore, with a contrary wind, it is advisable not to keep too far out in the offing, in order to make the eddy available, and not to lose favourable anchoring ground, and perhaps to be compelled to anchor in

deep water. Along the coast to the north of Tyringin there are numerous villages (campongs), the inhabitants of which come on board to provide ships with fruit, fowl, eggs, and often turtles. Generally the coast fronting the sea is low, though occasionally interrupted by hills and conspicuous rocky points.

Fourth Point. 22. Fourth Point, or Tykorang Point, is low, but easily discerned from its numerous cocoa-nut trees; and lies in 6° 4′ 45″ S., and 105° 56′ 28″ E.* From this point, Krakatoa Peak bears W. ¾ S., Sebezee Peak,† on Bezee Island, W.N.W. ⅔ W., the Button N. b. E. ⅓ E., the Cap N.E. b. N., the two extremities of Thwart-the-way N. ¾ W. and N.N.W. ¼ W., and the Peaks of Rajah Bassa N.W. b. N.-westerly. From Fourth Point a reef projects half a mile, with soundings of 20 fathoms close to; outside or to the northward the depths increase speedily to 25 fathoms, and at 2 or 3 miles off the point to 30 fathoms, which is a proper distance for doubling the point. From thence

Anjer. the coast runs E.N.E. 2 miles, to the town of Anjer, a place of the highest importance to vessels bound to China in the eastern monsoon, for obtaining water and refreshments. The houses being dispersed among the trees, the town is scarcely discernible at some distance, although, when near the shore, they and the flagstaff will be readily distinguished. This flagstaff, by the trigonometrical survey of Lieut. Staring, D.R.N., is in 6° 3′ 10″ S., and 105° 58′ 43″ E., or 53′ 17″ west from Batavia.

Roadstead. The anchorage is N. b. W. from the Fort, in from 12 to 19 fathoms water, soft ground. From a position in 16 fathoms, three-quarters of a mile off-shore, the flagstaff of the Fort bears S.S.E., Fourth Point S.W. ¼ S., the Cap N.N.E. ½ E., and the Button N. ½ E.; and from thence the soundings decrease uniformly to 9 and 8 fathoms at 2 cables' lengths from the shore. In the western monsoon it is but an indifferent road, and landing is very dangerous on account of the high surf. Horsburgh mentions an instance of a ship there being assailed in the month of April by a heavy gale of wind, driven from her anchors, and thrown on the rocky shore; after the storm the ship was got off, with loss of rudder and other damages.

Thwart-the-way. 23. Thwart-the-way, or Poulo Renjang, lies in the middle of the narrowest part of Sunda Strait; it is of moderate height,

* A lighthouse is being erected on Fourth Point.

† Pulo Bessy in Horsburgh's chart of the Strait of Sunda.

rather more elevated at its S.W. side, and easily discernible by its irregular shape. It is about 2 miles long in a N.N.W. and S.S.E. direction; very steep all around, except at its southern extremity, where a reef projects 2 or 3 cables' lengths, on which a rock above water is visible. According to Lieut. Rietveld, the highest part lies in 5° 58″ S., and 105° 54′ 10″ E., and bears N. b. W. $\frac{3}{4}$ W. from Fourth Point, W.S.W. a little westerly from St. Nicholas Point, and N.E. b. E. $\frac{3}{4}$ E. from Krakatoa Point.

The Cap.

24. The Cap, or Poulo Oelar, is a very small round-shaped island, N. b. E. 3 miles from Anjer. Between it and Merak Island lies the dangerous bank called Brouwers Sand, which is very hard, and extends nearly 3 miles along the Java coast; its breadth being only 2 cables' lengths. The soundings on this bank are 4 and $3\frac{1}{2}$ fathoms, although on three different spots there are only $2\frac{1}{2}$ and $1\frac{1}{2}$ fathoms at low water. Between the bank and the shore there is a channel of a mile in breadth, and from 6 to 10 fathoms in depth, which increases, in the direction of the Cap, to 15 and 20 fathoms. But in this channel a rock called Kroenjo, which partly dries at low water, lies $1\frac{1}{2}$ or 2 cables' lengths off-shore; from this rock the Cap bears S.W. b. W. $\frac{1}{2}$ W., the Button N.W. $\frac{1}{2}$ N., and the west point of Merak Island N $\frac{3}{4}$ W. Close to the west side of Brouwers Sand will be found 10 to 15 fathoms water, increasing to 19 and 20 fathoms at the distance of a mile, which is a proper distance to pass this danger. As a leading mark, to avoid this bank, when standing in-shore, between the Cap and Merak Island, it is recommended to keep the Cap inside of Fourth Point, and never to bring it outside of that point. The southern limit of this sand lies 2 miles N.E. from the Cap, and its northern end forms with Merak Island a channel of 2 cables' lengths wide, and with 18 to 10 fathoms water.

Brouwers Sand.

Clearing Mark.

Merak Island.

25. Merak Island is of considerable height, nearly round, and about half a mile in diameter: it bears N.E. $\frac{1}{2}$ N. $5\frac{1}{2}$ miles from the Cap; and lies in 5° 56′ S., and 106° 2′ 52″ E. The channel between this island and the Java Coast forms the little harbour of Merak, which is nearly half a mile in extent, but endangered by a rock mid-channel, called Tarremboe, which partly dries at low water.* On each side of this rock there is a passage with 5 to 10

Merak Harbour.

* *See* Plan of Merak Harbour.

fathoms water; it makes no difference which of the two passages is taken, provided you keep closer to either of the Merak Islands than to the rock. The entrance to the harbour, north of Great Merak, is the best, and more than a cable's length in breadth; and as the rocks do not project far off the island, and there being a depth of 6 to 14 fathoms water, it is not dangerous if the vessel be kept on the island side. The anchorage with S.W. winds is due east from the highest part of the island, and north of Tarremboe rock, in 6 to 11 fathoms water, soft ground. Sometimes a heavy swell sets into the bay, for which reason it is not to be considered safe for large ships in the western monsoon, but small vessels will always find a good shelter under Great Merak. Little Merak is connected to the main by a reef or dyke of rocks, which is just under water, and consequently cannot be passed by laden boats. The Java shore is steep-to in Merak Bay.

Merak Island to St. Nicholas Point.

26. From Merak Island to St. Nicholas Point the course is N.E.; the shore is very steep, and may be approached to the distance of half a mile, and to 20 or 18 fathoms water. The soundings increase regularly from the shore to 30 fathoms; at a distance of 4 miles the depths are 40 and 50 fathoms, and still more when approaching St. Nicholas Point. Midway between this point and Merak lies close in-shore the small island Tamposa.

St. Nicholas Point.

27. St. Nicholas Point is the extreme end of the steep promontory which forms the northern point of Java, and stands in 5° 52′ 33″ S. and 106° 6′ 3″ E. of Greenwich, or 45′ 57″ W. from Batavia, by the trigonometrical survey of 1841. From this point the Button bears W. b. S.; the extreme points of Thwart-the-way S.W. b. W. $\frac{1}{2}$ W., and W.S.W. $\frac{1}{2}$ W.; Rajah Bassa Peaks W.N.W. $\frac{3}{4}$ W. and W. b. N.; Hog Point W. $\frac{1}{2}$ S.; Krakatoa Peak W.S.W.; and Sebezee Peak W. $\frac{3}{4}$ S.

CHAPTER II

The Strait of Sunda (North Side) and Zutphen Islands.

28. Flat Point, or the southern extremity of Sumatra, forms the north-western boundary of Sunda Strait, and is in latitude 5° 59′ S., and longitude 104° 36′ 30″ E. of Greenwich, or 2° 15′ 30″ W. of Batavia by chronometer. *Flat Point.*

Flat Point is properly the westernmost point of the low projecting tongue-land, which separates Keyser Bay from Blimbing Bay, and the east point of which is usually called, though improperly, Chinna Point; its correct name being Rada, another point 3 miles more to the westward being Chinna Point. In most of the English charts Flat Point is laid down 4 or 5 minutes more westerly, but a great number of good chronometric observations in H.N.M. ships confirm the above-mentioned position.*

29. Fortune Island, or Poulo Batou Ketjil, in 5° 54′ 30″ S., and 104° 29′ E., by chronometer, lies about 5 miles from the main, and N.W.b.W. 9 miles from Flat Point; it is low, woody, about a mile in diameter, and surrounded by a reef also a mile in extent. From Flat Point a small reef projects, but at a mile off there are from 7 to 10 fathoms. At the distance of $2\frac{1}{2}$ or 3 miles S.W. from Flat Point there is a narrow bank, with 8, 13, and 15 fathoms water on it, stretching W.N.W. and E.S.E., about 5 miles in length, and about a mile in breadth, partly consisting of reddish sand. Outside of this bank the soundings increase rapidly to 30, 40, and 50 fathoms, and inside of it there is a channel about $1\frac{1}{2}$ miles wide, with 14 and 15 fathoms depth. *Fortune Island.*

30. Approaching the Strait of Sunda by night, the soundings will be a good guide in passing Fortune Island and Flat Point:

* The observations of Lieut. Stoll, Commander of H.N.M. Steamer Phœnix, in 1840, and Captain de Vriese, in H.N.M. Brig Panter, in 1842, seem to throw some doubt upon this statement.

at 6 miles off shore the depths will be 40 and 30 fathoms, and with a commanding breeze ships may venture into 20 or even 15 fathoms; but when it is very dark, and the land cannot be distinguished, it is advisable not to come within 20 fathoms.

Blimbing Bay. Inside of Fortune Island, and north of Flat Point, lies Blimbing Bay, at the entrance of which ships may anchor in 7 or 8 fathoms, and will find a good berth there with S.E. winds, but not with N.W. Small vessels may be sheltered from all winds by anchoring further inside in 3 fathoms, behind the projecting reef. On the east side of the Bay there is a small river, but its water is brackish; a fresh-water spring, however, may be found inside of the south-west point, from which a reef projects a quarter or half a mile to the northward. An anchorage may also be found to the eastward of Fortune Island in 9 or 10 fathoms, in any depth from 5 to 17 fathoms. In some charts two reefs are placed in this bay close in-shore, it is therefore advisable to be careful, although it is very probable that they do not exist.*

Keyser Bay. 31. Keyser Bay, inside of the S.W. point of Sumatra, runs 10 leagues in a north-westerly direction, and is 6 leagues wide at its entrance, with soundings of 50 and 100 fathoms, and more. The shore on the west side is steep, affords no shelter from south-easterly winds, and has 20 and 30 fathoms water within half a mile of the shore. Tampang Bay, just round Chinna and Rada Points, is only an open bight, but has good anchorage ground in 12 to 15 fathoms depth, a mile from the shore. A ship is exposed here to south-easterly winds, and has much difficulty in getting water, on account of the rocky shore, from the shallow rivulets that discharge themselves into the bay. The village of Borne lies in the N.W. end of the bay, at the mouth of the rivulet of Semangka, the water of which is very good, but boats will find it difficult to enter. The land is low, and fronting the sea marshy; the best anchorage is East or E. b. N. from the mouth of the rivulet, 1 or $1\frac{1}{2}$ miles distant

* The coast to the N.W. of Blimbing is very erroneously laid down in most of the English Charts, especially in longitude. According to the reports of H.N.M. ships, the positions of the principal points are, Siggin Point, 5° 29′ S., and 104° 12′ 30″ E.; Poulo Pisang, in Croe Bay, 5° 11′ 20″ S., and 104° 0′ 03″ E.; Fort Marlborough, 3° 48′ S., and 102° 20′ E.; and Padang Head, in 0° 59′ 30″ S., and 100° 22′ 30″ E.

from the shore. Ships lie here usually without danger from S.E. winds, which seldom throw a very high swell so far up the bay. There is a rocky shoal near Betong Point, the southern extremity of the bay near Borne, which projects more than a mile in the offing, with 10 fathoms very near it. The eastern side of Keyser Bay, north of Kalang-bayang Harbour, is not so steep, and affords good anchorage about 2 miles off, in 20 or 30 fathoms, but it is also exposed to S.E. winds.

Keyser Island.

32. Keyser Island, or Poulo Labocan, lies nearly in the middle of the entrance of Keyser Bay, is high and steep-to, all round, and affords but one spot fit for anchorage, which is on the N.E. side in 25 or 30 fathoms, sand, and very near the shore. According to Lieutenant P. A. Bloys, D.R.N., that spot is indicated by a bamboo house among the cocoa-nut trees near the beach, but he adds that it is a very indifferent berth in the western monsoon. There is fresh water, but the high surf renders landing very troublesome. It is inhabited and very well cultivated, and produces large trees fit for masts.

Kalang-bayang Harbour.

33. Kalang-bayang Harbour, on the eastern side of Keyser Bay and about east from the north point of Keyser Island, is small though safe, affords good shelter from all winds, and sufficient depths for all classes of ships. Water and fresh provisions may be procured there. In 1845 this harbour was surveyed by Lieuts. Prins and Boelen of the Dutch Royal Navy, who say that it is easily recognised by the high and rocky island of Eyoe, which lies about a mile outside, and may be seen 5 leagues. Half a mile to the N.W. of Eyoe there is another island, or rather a high rock with a single cocoa-nut tree on it, called Poulo Klappa. With the western monsoon pass to the northward of the latter, and run into the bay so as to bring Napal Point to bear W. or W. b. S. where the vessel may anchor near the eastern beach in 10 fathoms, soft ground. Or she may run in about N. b. E. between the two islands. If coming from the eastward, and with a commanding breeze, she should pass to the eastward of Eyoe, between it and Batoe Kaboe Island on a N.N.W. course, or even between the latter island and the main, steering about N.W. But this channel is very narrow, and the seaman will perceive that these three last-mentioned channels necessarily lead close to the Rover Rocks,

Eyoe Island.

Klappa Island.

Batoe Kaboe.

which are, however, easily avoided, and left to the eastward, as most of them are above water.

In the north-eastern part of the bay fresh water may be obtained from a small rivulet, and from whence there is a road leading to the *campong*, or village. Refreshments are very scarce. On Eyoe Island there is but one inhabitant, whose occupation is collecting "birds' nests."

Kiloang Bay.

34. Kiloang Bay lies 5 miles to the south-eastward of Kalang-bayang, and also affords a safe anchorage. It may be known by the Island Tonkalie, which is visible 12 miles, and stands off the east point of the bay, being separated from the main by a small channel only fit for boats. Coming from the westward or southward with a leading wind, steer for Tonkalie, till it bears due east 2 or 3 cables' lengths, when three groups of black rocks will be seen, the southernmost of which bears N.N.W. from Tonkalie and S.W. from the others. Steer N.E. and E.N.E. past these rocks in from 30 to 20 fathoms, for the eastern side of the bay, which is very high, till Kiloang Island bears west, where a good anchorage may be taken in 13 fathoms between it and the beach, and sheltered from all winds. Kiloang Island, which is small and not very high, stands near the eastern beach of this bay, with some rocks at its northern and southern extremities, a large reef to the eastward, and a smaller one on its western side. Although the bay is spacious, yet pass close to the westward of Tonkalie. Everywhere else in the bay anchoring ground may be found in 16 to 18 fathoms, but accompanied by a heavy swell. It is unsafe to pass Kiloang Island to the northward, where there are but 3 and 4 fathoms, as a high swell sometimes breaks there. The Black Rocks should not be brought to bear further to the southward than west, nor is it necessary to run far in. This bay, as well as Kalang-bayang Harbour, contains all sorts of wood, and behind Kiloang Island a ship is as safe as in the harbour of Lagoendy. With the land wind which blows here from the northward, vessels may run out, but it is recommended to have a boat in attendance to tow, lest they should get becalmed under the high land.

Mountains of Kalang-bayang.

35. The land of Sumatra eastward of those two bays is very high, consisting of the Kalang-bayang or Kamantara Mountains, which are stated by Lieut. Prins to be 3,418 feet high;

and 3 miles more to the northward the Ratteh Mountains, the southernmost peak of which, according to the same observer, is 5,097 English feet above the sea. More westerly, and not far from the shore of Keyser Bay, the Lampong Mountains rise to the height of 6,560 English feet, and Keyser Peak, according to Lieut. Melvill, reaches to 7,412 feet, and stands in 5° 25′ S. and 104° 44′ E. *of Ratteh, and of Lampong. Keyser Peak.*

36. Lampong Bay is a spacious gulf, being 20 miles east and west, and the same north and south, with anchoring ground throughout its whole extent. To the southward it is bounded by the Lagoendy Islands and the Strait of Sunda; to the westward by many islands and small bays; to the northward by the high land of Sumatra, and to the eastward by Mount Rajah Bassa. Lieutenants Prins and Boelen surveyed this bay in 1845; and the following description is given on their authority. *Lampong Bay.*

37. In every part of the bay from north to south will be found from 10 fathoms, mud, to 20 fathoms, clay bottom. If a vessel keeps outside of the western islands there are but two dangers, both of which may be easily avoided. The first is a sand bank surrounded by a reef, which rises from 17 fathoms, mud, and bears E.S.E., $1\frac{1}{2}$ miles from Kalagian and N.E. $\frac{1}{4}$ N. 1 mile from Little Pokowang, and which dries at low water. The second is a reef with 2 and $1\frac{1}{2}$ fathoms upon it, bearing S.E. $\frac{1}{2}$ S. $1\frac{1}{4}$ miles from the easternmost of the Choondong islands. *Dangers.*

38. Next to Tikoes Point, Pedada Bay is first met with: it is $1\frac{1}{2}$ miles wide at the entrance, and $3\frac{1}{2}$ miles deep. When running into this bay in the direction of the southern end of the Kalang-bayang Mountains on a W. $\frac{1}{2}$ N. course, you will find 20 to 15 fathoms, clay and mud, and the three small islands of Pedada, Penarian, and Lalanga. Pedada is the easternmost and highest, but N. b. E. from it half a mile, there are two detached reefs, usually covered with breakers; and a third reef N.E., which bears W. b. S. from the north point of the bay. By keeping this last reef on the starboard bow, and the other two on the port bow, it will lead to an anchorage in 15 fathoms water, very near the campong Pedada, bearing south. This campong is to the westward of Lalanga Island, and stands on a clear fresh-water stream. The high rocky islet of Klappa *Pedada Bay.*

is connected with Pedada Point by three groups of rocks above water, leaving, however, between each of them a passage for small craft. N.E. of Klappa lie also three patches of rock, with 17 and 16 fathoms clay between them, and, to avoid them, keep Lalanga Island to the westward of north. This small island is also high, with a reef from its N.E. point about 2 cables in length.

Poondo Bay. 39. Poondo Bay is 2 miles wide and 3 miles long, with a depth of 10 to 7 fathoms. Across the entrance lies Pokowang, the largest island in Lampong Bay, except Lagoendy, with a peak on its northern side, and to the eastward a small island, with which it is connected by a reef. Poondo Bay may be approached on either side of Pokowang. When taking the northern passage, which is preferable, the white coral reefs are seen at some distance, but mind the reef projecting 3 cables' lengths N.E. from the island, with 15 fathoms close to it. There is also a detached coral reef close to the N.W. point of Pokowang, which must be kept on the port side, while the four coral reefs, now visible, and lying mid-channel N.W. and W.N.W. from the centre of Pokowang, should be kept on the starboard side. The depth of 8 or 9 fathoms, mud, will be found a convenient anchorage, campong Poondo bearing W., and the south point of the bay S.E. When passing along the south side of Pokowang, or if, when near Poulo Satenga, a W.N.W. course is steered, pay attention to the discolouration of the water on the 2 fathoms banks, which, like all the other visible coral reefs which project from the south side of the bay, ought to be passed on their north side, keeping in 15 to 9 fathoms, a little less than a mile distant from the south shore of Pokowang.

Ratteh Bay. 40. Next to Poondo Bay comes Ratteh Bay, which is 3 miles each way, with 16 to 18 fathoms, mud bottom. At the entrance of the bay lies Kalagian, a high island, with a small islet off its south point, and separated from it by a boat channel of 3 to 8 fathoms in depth. Not quite a mile S. b. E. from Kalagian lies a coral reef, showing at low water, like a black speck, and bearing W.N.W. $\frac{1}{4}$ W. $1\frac{1}{2}$ miles from the above-mentioned coral reefs; between which there are 17 and 14 fathoms, mud. Ratteh Bay may be approached on either side of Kalagian, and the two reefs to the westward of the island,

which dry at low water, may be discerned at some distance, and, consequently, easily avoided. They are not in mid-channel, and lie N.W. and S.E. of each other, with 9 and 11 fathoms between them and Kalagian. Three rivulets on the western side of the bay lead to the campongs of Sabo Ratteh and Pinjindangong, and form a bank along the N.W. coast, from half a mile to a mile off-shore. The campong Menango, on the north side of the bay, is moderately well inhabited, and from thence to the northward the population of the coast increases.

Mahitam.

41. Mahitam Island lies off the north point of Ratteh Bay, with which it is connected by a reef: it affords good anchorage at its north side, in 13 fathoms, on mud.

Tagal, and Tankel.

Tagal Island bears N.E. from Mahitam, and about W. b. S. from the Choondong Islands; it is flat-topped, but being visible throughout the whole of Lampong Bay, it is used as a general directing mark. When coming in from the eastward, a vessel may steer N.W. right for it, and pass it in 15 fathoms; and if entering from the southward it is also employed as a mark for Lagoendy Pass. Betwixt Tagal and the western shore there are some sand-banks, which obstruct the passage and leave but a very small channel, with 15 fathoms mud. In the bay N.W. of Tagal there are two campongs—Ringong and Oerong; and near the south point of the bay lies the small island Laho, connected to the shore by a reef, and throwing out another to the northward. The general depth in the bay is from 12 to 9 fathoms, mud, and on its northern side lies the small island Tambikel, attached to the main by a reef. N.E. from this island, between it and Tankel, there is a channel with 11 and 12 fathoms, mud. The north side of Tankel Island is low, but its south side is high; and from its eastern point a reef stretches off 2 or 3 cables' lengths, showing, at low water, some black spots, which may be passed in from 9 to 14 fathoms.

North Bight of Lampong Bay.

42. North of Tankel, the bay narrows, so as to be scarcely 4 miles wide, but it contains four islands—Pomogotang, $1\frac{1}{2}$ miles due north from Tankel, all sand, but carrying some trees, and surrounded by a large reef; Little Pomogotang, a bank without trees, one mile W.N.W. from the former, and also begirt by a broad reef. The third island, Koeber, lies S.W. from Pomogotang; it is separated from the main by a 5 fathoms

channel, and a reef runs out from its eastern side 2 cables' lengths. The fourth is the low island of Passarang, in Telok Betong Road, south-east from the river. Besides these islands there are some coral reefs, with depths varying from 1 to 4 fathoms: the easternmost of them bears N. $\frac{1}{4}$ W. from Tagal, and east from the south point of Passarang. A vessel going to Telok Betong, after passing to the eastward of Tagal, should be careful not to bring its east point to the eastward of south, in order to leave Pomogotang and the adjacent dangers to the westward. When Passarang bears west, or W. b. S, and not less than a mile distant, on account of its reefs, a good anchorage will be found in 7 to 9 fathoms, mud. The flagstaff, which will, however, be scarcely visible for the high trees, will bear W. b. N. or W.N.W.

Telok Betong. Telok Betong is the chief town in Lampong Bay. Its population consists of natives of Sumatra and of Bougies, with a Regent from the Dutch Government as their Chief; they trade with the Javanese in Lampong tobacco, which is highly esteemed, but this place being never visited by European vessels, fresh provisions are not to be obtained.

Choondong Isles. 43. The eastern side of Lampong Bay, between Telok Betong and Choondong Isles, is high and exempt from dangers, and it may be approached in safety to 14 and 15 fathoms, close-to. The Choondong Islands are three in number, of which the northernmost is a steep rock, and the two others are larger, but not so high. Betwixt them are narrow passages, with 12 fathoms. From the easternmost island a coral reef projects S.E. 2 cables' lengths; and at $1\frac{1}{4}$ miles S.E. $\frac{1}{2}$ S. from the same island, lies the coral reef mentioned above, with $1\frac{1}{2}$ fathoms water upon it: between these islands and the main, there are 14 and 10 fathoms, mud.

Kranvogel Island. 44. Kranvogel Island, 9 miles S.E. from the Choondong Isles, and connected to the shore by a coral reef, with 9 fathoms close to its south and west sides, is very difficult to discern, as it lies close to the high land, and consists only of a single rock; just to the eastward of it, however, there are some white limestone rocks on the shore. From the Choondong Islands to Rajah Bassa, the coast, at 2 and 3 cables' lengths distance, is fronted by a line of rocks on which the surf breaks heavily with westerly winds, and makes the landing very troublesome.

45. To the northward of Tiga Island the Sumatra coast forms a deep curve called Blantong or Lobogh Bay, with 4 or 5 fathoms, mud, and a salt-water river. The points of the bay on each side are covered with rocks and a high surf. *Lobogh Bay.*

46. Rajah Bassa Road, in the S.E. part of Lampong Bay, off the high land, the high peaks of which are called Rajah Bassa, is frequently visited by China ships, it being an excellent place for procuring good water with facility, and all other refreshments, although Anjer is at present still better. A ship should anchor here between the coral reefs that line the shore, and the three rocky islets of Tiga, which lie 3 miles off. The westernmost of these is the largest, with a reef on its N.W. side, projecting 2 cables' lengths, and indicated usually by breakers; and between the two south-easternmost of them there is a channel with 18 fathoms depth. According to Lieut. Prins there are three campongs to the northward of Klappa Point, viz., Kalianda, bearing N.N.E. $\frac{3}{4}$ E. from Tiga, and having in front of the white sandy beach some large rocks above water, between which there are openings that make it very easy to land. The anchorage is in 7 to 10 fathoms, mud, due west from the campong, and a mile off shore. There are several springs of warm water there amongst the rocks, near the beach. The second campong is Tyanti, E.N.E. from the largest Tiga islet. *Rajah Bassa Road.* *Tiga Islets.* *Kalianda.* *Tyanti.*

The best anchorage in Rajah Bassa Road is a mile off shore, with Cocoa-nut Point in one with Hog Point, S.E. b. E., the North Peak of Rajah Bassa* E.N.E., and the northernmost Tiga Islet, W. $\frac{3}{4}$ S., $1\frac{1}{2}$ miles distant, in 12 to 16 fathoms, blue mud. On these bearings a ship lies just abreast of the watering-places. The shore is lined by a rocky bank, which in some places projects about half a mile, with 7 fathoms close to it, so that it is not advisable to anchor in less than 12 fathoms; the depths increase in the direction of Tiga Islets, and at the distance of a mile there are 25 fathoms. The third campong, which is called Rajah Bassa, lies just to the northward of Cocoa-nut Point, and about east from Tiga; it is the largest *Best watering place.* *Rajah Bassa Village.*

* The highest peak of the Rajah Bassa Mountains is said by Horsburgh to be 1,600 feet above the sea; but the angular measurement of Lieut. Melvill, D.R.N., gives for the N.W. Peak 4,398 English feet, and for the S.E. Peak 4,093 feet.

one of the three, but the watering there is very difficult, at least much more so than at Tyanti, and the landing dangerous with westerly winds, as the coast there is always covered with high breakers. Boats which go for water ought to remain some distance from the shore, drop their grapnels, and float the casks on shore.

Cocoa-nut Point.

47. Cocoa-nut or Rajah Bassa Point is low, covered with cocoa-nut trees, and bears N.W. b. W., nearly 8 miles distant from Hog Point, and from the extreme ends of Tiga Island, E.S.E. ½ E. and E. b. S. Between Cocoa-nut and Hog Points the coast curves in to the north-eastward 2 miles, and at the bottom of this bight lie the two small Bight Islands surrounded by reefs. Opposite the north side of these islands lies a village near a river, and proas and small vessels are sheltered here by a projecting point. The soundings throughout this bight are from 15 to 25 fathoms, decreasing near the shore to 10 and 8 fathoms.

Bight Islands.

Lagoendy Islands.

48. The Lagoendy group, in the south-western part of Lampong Bay, consists of seven islands, viz., Lagoendy, Rond, Saka, Soengal, Tims, Sussarat, and Mangoman; they are all uninhabited, but produce good timber, deer, and wild hogs. Along the southern shores of the first four islands, and also along the neighbouring coast of Sumatra, 40 and 50 fathoms hard ground are found close in, and the sea there in the western monsoon is very violent, but on the northern side of these islands boats can generally land. The following description is quoted from the reports of Lieut. Prins.

Lagoendy.

49. Lagoendy, the largest of this group, stretches E.N.E. and W.S.W. a mile; the west point is 5° 50′ 40″ S. and 105° 18′ E.; and close to the southward of this point lie two high, round-shaped rocks covered with verdure, N.E. ½ E. from each other, with a boat channel between them. S.E. of Lagoendy there is another rock or islet of the same character.

Nangga Harbour.

On the north side of Lagoendy Island there is a small but very safe bay, called Nangga Harbour, with 15 to 7 fathoms depth. In the middle of the entrance lies the small island Patappan, behind which a ship may find a good place of shelter from wind and sea. Captain Owen careened here H.M. sloop Barracouta in February 1811, and moored her with the east and west points of the bay bearing respectively N.E. ½ N. and

N.W., Patappan from N.N.E. to N. b. W., and a cable's length from the reef along the coast. The name of Nangga was given by him to this harbour. Lieut. Prins says there is room for 10 or 12 ships, and that fresh water is found on Lagoendy, S.E. from Poulo Patappan.

50. A little outside of Nangga Harbour lies Mangoman Island, with 15 to 22 fathoms clay all round it, except on its eastern side, where only from 10 to 15 are found. When coming from the eastward or northward, a mistake may occur between this island and Patappan, but the latter is lower and smaller than Mangoman. Lieut. Prins says that the rock laid down in the English charts, half a mile E.N.E. of Mangoman, does not exist.

51. Lagoendy Strait, between Tikoes Point and the islands, is 2 miles wide, and may be recommended to ships which are working out of Lampong Bay in the western monsoon. About mid-channel stands the high island of Sussarat, with 10 fathoms sand close-to, and 30 further off. Near its west point there are some rocks, but they are high above water, and Lieut. Prins adds, that although this island is in the middle of the channel, yet in a calm ships need not be alarmed by the current which seems to set towards it; close in, the same current will set them off again, and the ripples and green patches of water are of no consequence. The passages on either side of Sussarat are equally good, and with adverse winds or currents good anchorage may be taken to the eastward of that island, in 10 or 12 fathoms. *Lagoendy Strait.* *Sussarat Island.*

52. Pepper Bay, near Tikoes Point, with its huge three-cornered rock in the middle, is very limited; but the natives' proas row up behind the high western beach, where they find 18 fathoms close in. *Pepper Bay.*

The depth in the channel, between Lagoendy and Rond Island, is from 12 to 30 fathoms, hard ground, but a strong current will be felt there. Saka has also 20 or 30 fathoms close to it; but at the distance of about half a mile S.E. b. S. there is a rock which covers at high water: it is, however, always manifest from its breakers. This passage cannot be recommended, nor that on the other side of the island, between it and Soengal, though the water is everywhere deep, but the ground is foul and the current strong. *Rond Island.* *Saka Island.* *Rock awash.*

Tims Island. 53. Tims Island lies 1½ miles to the eastward of Soengal; it is low, consists chiefly of red clay, and is surrounded by a broad reef with heavy breakers; but the channels on either side into Lampong Bay are quite clear.

Hog Point. 54. Hog Point, or Cape Toka, has a round hilly appearance, and is easily distinguished by ships coming from the eastward; but coming from the westward it has often been mistaken for one of the Zutphen Islands. According to the trigonometric observations of Lieut. Rietveld, D.R.N., in 1841, the point lies in 5° 55′ 15″ S., and 105° 47′ E., or 1° 5′ W. from Batavia. From this point Krakatoa bears S.W. ½ W.; Sebezee W. b. S.; the extreme points of Sebooko W.N.W. ½ W. and west; Cocoanut Point N.W. b. W.; and the two highest peaks of Rajah Bassa N.N.W. ⅔ W. and N.N.W. ¾ W.

Collier Rock. 55. Not far from Hog Point, distant about a mile from the nearest shore, lies the Tims-klip, or, as Horsburgh calls it, the Collier Rock, and says it is 6 or 7 feet above water, and 56 feet in circuit. According to Lieut. Rietveld, it bears N.W. from the extreme end of Hog Point, with a reef projecting to the N.N.E. Nearer to and about a cable's length W. from Hog Point lies another rock above water, with deep water all round it. The soundings a mile distant from Hog Point are from 40 to 60 fathoms.

Zutphen Islands. 56. The Zutphen Islands front the coast of Sumatra to the N.E. of Hog Point; four of them are large, and a great number very small, with many shoals between them, stretching N.E. and S.W. 4 miles, and within 2½ miles of the main. On their south side these islands are steep-to, having 40 and 50 fathoms water very near them, but to the northward vessels might occasionally anchor; and Lieutenant Prins, in 1844, discovered an excellent anchorage for a dozen or more large vessels between the Zutphens and Hog Point. He says if, in either of the monsoons, a vessel cannot beat through, or is detained by calms or currents, she may bring Kandang Island to bear N.E. and Sindo Island N., and to the westward of that line she may choose her berth in from 30 to 5 fathoms, sand; and from thence the land wind will enable her on the following morning to pursue her voyage. Moreover, just to the westward of Sindo there is a small river, with good water, near the campong Pagatan. The passage between the Zutphen Islands and Su-

Kandang Anchorage.

matra is generally used by proas, and might be taken by large ships, with a commanding breeze, there being sufficient depth of water, but great caution is recommended, as there are several rocks in the passage. These islands were surveyed in 1833 by Lieut. D. H. Kolff, D.R.N., and in 1841 by Lieut. Rietveld, and the following lines will show the results of their survey:—

57. The northernmost and largest of the Zutphen Islands is Remoa: it is also the highest, being elevated 300 or 400 feet above the sea. To the N.W. there is a low neck of land, which at 2 cables' lengths from the ground begins to rise; and the south end is the highest. Part of the low neck is a sandy beach, which affords a good place for boats, it being very difficult to land anywhere else. Remoa is covered with trees, large and small, as also are all the other islands belonging to this group. *Remoa Island.*

58. Close to the N.E. point of Remoa lies a high rocky islet, called Fatal, and from thence a reef projects to the N. and N.W., along with a separate coral rock, dry at low water, and all stretching off about half a mile, with depths of 11 and 12 fathoms close to them, so that the lead gives but little warning. From the northernmost point of this reef, the north point of Fatal Island is in one with the Button; and from its western-most edge the west point of Remoa is in one with the west point of Kandang Island. Abreast of the north point of Remoa, the coast of Sumatra forms a bluff, steep point, and just to the northward of this point there is a reef, some rocky points of which are seen above water; while still farther north the coast of Sumatra is lined with a mud bank, which makes landing in boats rather difficult. Lieut. Kolff anchored there with the schooner under his command in 7 fathoms, soft bottom, with the above-mentioned steep point of Sumatra S.W., Toempal Island S.S.W., and the N.W., or flat point of Remoa, S. $\frac{1}{2}$ E.; he found there some huts near a fresh-water spring, but in general the natives are not to be trusted; and he remarked that some piratical-looking proas made a hasty retreat at his appearance. *Fatal Reef, near Remoa.*

59. West of Remoa lies the small island of Toempal, very low and woody, and surrounded by a reef, which is very steep. *Toempal*

Coral Rocks. South of this island, and nearly in the mid-channel, are two steep coral rocks, with 2 or 3 feet water upon them with common tides, and sometimes dry; these rocks lie in the line which runs over Boompjes Reef, and the N.E. point of Thwart-the-way S.E. ½ E. Close to these rocks, on their east side, there are 23 fathoms water, which shoals gradually towards Remoa Island; and west and south of these rocks there are 12 and 16 fathoms. A little way farther south lies a small but steep coral rock, sometimes dry at low water; from this rock Boompjes Reef is in one with the north point of the Button, E. b. S., and the southernmost point of Sumatra in one with the east point of Cocoa-nut Island. When a ship coming from the northward intends to pass between Sumatra and Remoa, the best way is to haul in-shore of that island, and

Passage inside of the Zutphen Islands. then, in order to clear the reef off its N. and N.W. points, keep the west point of Kandang just open of the west point of Remoa, till it is between the latter and Toempal; then steer close in for Toempal, which is very steep here, to the above-mentioned coral rocks. Lieut. Kolff anchored there in

Anchorages. 12 fathoms, sand bottom, Toempal Island bearing N.N.E., the N.W. point of Remoa N.E. ½ E.; the steep point of Sumatra N. ½ W., the S.W. point of Remoa S. ½ E.; and the little rocky island, close in shore of Sumatra, where a fresh-water spring runs into the sea, about west. Another anchorage is between Cocoa-nut Island and the Brothers, with the west point of High Island bearing south half a mile in 15 fathoms depth.

Boompjes Reef. The south side of Remoa Island is fronted by a reef, and partly above water, with a very narrow channel between them; it is called Boompjes Reef, and carries some small brushwood; the N.E. point of Thwart-the-way bears S.E. ½ E. from its south

Brothers. point. The Brothers are low and sandy islands, covered with small wood, and surrounded by a narrow but steep reef, with 15 and 18 fathoms water close to it. With a leading wind, a ship coming in from the eastward may pass between the Brothers and Hout Island, as this channel has sufficient depth, viz., 18 and 20 fathoms; but its narrowness and the strong currents, sometimes at the rate of 2 or 3 miles an hour, render it dangerous, and the more so as the depths increase speedily to 30 and 40 fathoms. Careful attention should also be paid

to the reef projecting from the N.E. point of Hout Island, upon which, according to Horsburgh, the Bombay grounded in February 1815.

Hout, High, and Kandang Islands.

60. Hout and High Islands are both of considerable height, rocky and covered with large trees ; as well as Kandang, which has on its N.W. side two coral rocks visible above water, and on their western sides steep toward the sea. Near these rocks, on the N.W. side of Kandang, there is a small bay that affords a safe anchorage to proas in 11 or 12 fathoms water, close inshore, and even large ships would find safety there ; very often it is frequented by pirates. Cocoa-nut Island, west of Kandang, is small and very low, and surrounded by a reef which is very steep-to. The best course from the west point of Remoa Island to Hog Point is to haul close in to Cocoa-nut Island, by which you may run freely from the visible reefs, N.W. of Kandang, and find soundings of 16 and 20 fathoms, which will increase south of Cocoa-nut Island to 30, and east of Hog Point to 50 and 60 fathoms, no bottom.

Cocoa-nut Island.

Button.

61. The Button lies W. b. S. from St. Nicholas Point, and E.$\frac{1}{4}$N. from Hog Point ; it is a high and steep little island, covered with trees, and little more in extent than the Cap. According to a late edition of Horsburgh's Directory, on the 15th of May, 1837, the American ship Claudius, Captain Winsor, struck on a sharp rock, with Thwart-the-way bearing S.W. about 5 miles, and the Button 1$\frac{1}{2}$ miles S. b. E. ; the instant she was clear of the rock there was no bottom at 30 fathoms. As in the old charts a rock was laid down not far from these bearings, Lieut. B. G. Escher, D.R.N., was despatched to the spot, in H.N.M. schooner Krokodil, to examine if these rocks were not the same. According to his observations he found but one, with the following bearings : the middle of the Button S.E. b. E. $\frac{3}{4}$ E. ; the south point of Thwart-the-way S.S.W. $\frac{1}{2}$ W. ; its N.W. point S.W. $\frac{3}{4}$ W. ; and the south point of the southernmost Zutphen Island just in one with the northernmost visible point of Bezee Island, which position agrees very well with that of the old charts. The depth was 17 feet upon the shoalest spot, increasing quickly in every direction, and at the distance of a quarter of a cable's length it was 16 fathoms. The current was very strong at the time, and caused an eddy on the lee side of the rock, where

Winsor Rock.

also more rocks could be discerned under water. According to these bearings this rock lies 1½ miles from the Button. In some old charts a rock is laid down S.W. from the Button, but its existence is very doubtful, as Lieut. Rietveld, in 1841, after a most arduous search, was not able to discover it.*

Stroom Rock. 62. The Stroom is a group of rocks lying very near each other, with some of their tops above water; and may be seen at a considerable distance by the breakers on the reefs which connect them under water. The currents which meet here from the north and east are often very strong, and Lieut. Rietveld says, that, with the opposite wind, there is, near these rocks, such a boiling and eddying of the water all round, that it almost appeared as if they were connected by a reef to Thwart-the-way, the light coloured patches between them appearing like rocks under water. The Stroom Rock is very steep-to, having 40 and 50 fathoms very near it: it bears E. ¾ S. from Hog Point; N.N.W. ½ W. from the west point of Thwart-the-way; W.N.W. from the north point of the same; and W. ⅔ S. from the north point of the Button; 1½ miles distant from Thwart-the-way, and nearly 2½ miles from Hout, the south-easternmost of the Zutphen Islands.

North Island. 63. North Island lies in 5° 41′ S., and 105° 54′ E.; and bears N. b. E. ½ E. 11 miles from Remoa, or the northernmost of the Zutphen Islands. It is small, bushy, and a full mile distant from the coast of Sumatra, with a small islet, called Sina, at its southern extremity, and a shoal with 3½ fathoms water to the S.E., which requires a berth of 1½ miles, but at the N. and S.W. sides it is steep-to.

The Sisters. 64. About 3 miles S.S.W. from North Island, and also near the Sumatra shore, lie three small islands, called the Sisters: and S.E. from them there is a small reef with 2 fathoms water, not mentioned in former charts. A ship which was aground upon this shoal had 12 feet water; North Island bearing N. ¼ E., and the middle of the Sisters W.N.W. Another, in the same predicament, had the east point of North Island N. b. E., and the outermost Sister N. b. W. ¼ W. to N.W. It is therefore advisable to give the Sisters a berth of 2 miles, where irregular soundings from 12, 16, and 8 fathoms will be

* See Nautical Magazines, 1845, p. 99, and 1847, p. 322.

found. Between North Island and the Sisters the coast bends in a little, and is edged by a mud bank; so that 2 miles from the shore will be found good soft ground for an anchor, in 8 to 12 fathoms, with North Island bearing N. b. E. Small vessels will find good anchorage between the Sisters and the main in 2 and 3 fathoms water. Abreast of the Sisters there is a fresh-water spring, but Lieut. Kolff found its contents detrimental to the health of his crew, although it was clear and free from any unpleasant taste. *Anchorage.*

65. About 4 miles south of the Sisters lies another small island, called Poulo Logok, which is very high; and near it the coast is rocky and steep. Lieut. Kolff found there 15 and 20 fathoms, hard sand; but, farther to the southward, toward the steep point near the Zutphen Islands, another mud bank projects from the shore; the lead is there a sure guide, for the bottom in 9 and 10 fathoms is hard, while in 7 and 6 fathoms it becomes soft. *Logok Island.*

At 6 miles to the northward of North Island is the river Sakampang, with brackish water at its mouth, but higher up good drinking water, and with 1 and 2 fathoms depth. More to the northward two small rivers enter the sea in 5° 31′ and 5° 27′ S., and the depths are, within a mile from the coast, from 1 to 3 fathoms, but at a greater distance speedily increasing to 5 and 12 fathoms. *Sakampang River.*

66. To work out through Sunda Strait in the western moonsoon, the best way is, to pass between Zutphen Islands and the Stroom Rock, but taking care not to come too near the eastern side of these islands, as Horsburgh quotes some instances of ships which, by the strong currents rushing in amongst the islands, were set into danger, and from the great depth were unable to guard against it by anchoring. The Bombay, in 1815, in coasting along the eastern side of Hout Island, was driven on one of its reefs, notwithstanding that she had dropped two anchors; after great exertion she was got off, but with considerable damage. For these reasons it is advisable to give the Zutphen Islands a berth of at least 2 miles on their eastern side, and then to beat up by short tacks along the coast of Sumatra between them and Hog Point. Afterwards passing either north or south of Tiga Islets, as the strong currents and hard squalls may allow, try to get westing in *Ships working out in the W. monsoon, near Zutphen Islands, Hog Point, and*

through Lampong Bay.

Lampong Bay, to the northward of Tims Island, and to pass betwixt it and Soengal or through Lagoendy Strait. In this manner a ship will make a quick passage through the Strait, if the wind be not too variable, besides having the advantage of anchoring behind Sebooko Island, or in Lampong Bay if the currents or winds are too strong.*

Great Channel.

67. The Great Channel to the north of Princes Island is divided into several smaller channels by three large islands situated between Princes Island and Sumatra. The southernmost of these channels lies between Princes Island and Krakatoa, which are about 8 leagues apart; and although much too deep for anchoring, it is the most frequented, being the largest,

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*In opposition, however, to the commonly received opinion, as above stated in the text, there are on record many instances of vessels having beaten out of the Strait, along the coast of Java, during the western monsoon, with more ease and celerity than could have been effected by stretching into Lampong Bay, in consequence of the westerly current having at those times developed its chief strength along the former side of the Strait.

The following extract from a ship's log-book will show something of the action of this current;—

1846.					
	At anchor 6 miles W. of Tyringin.				
March 1.	4 P.M.	Current S. b. E.	2 knots	Moderate breezes	
	8 „	„ S.	2 „	from W.S.W. to	
„ 2.	4 A.M.	„ S.S.E.	3 „	W. N. W., but	
	8 „	„ W.	4 „	freshening.	
	At anchor between the Button and St. Nicholas Point.				
March 2.	8 P.M.	Current S.	2 knots		
„ 3.	4 A.M.	„ S.W.	3 „	Fresh breeze from	
	6 „	„ S.W.	5 „	N.W.	
	8 „	„ S.W.	3 „		
	12 „	„ S.W.	2 „	N.N.E. moderate.	
	2 P.M.	„ Slack.			
	4 „	„ S.E.	2 „	Light westerly	
	8 „	„ S.E.	2 „	breeze.	
4.	1 A.M.	„ S.E.	2 „	Freshening.	
	2 „	„ S.	2 „		
	4 „	„ S.S.W.	2 „	Gentle N. W.	
	6 „	„ S.W.	4 „	breezes.	
	8 „	„ S.W.	5 „		

It has been generally supposed that the currents at both ends of Java are regulated by the monsoons; but according to Lieut. M. H. Jansen, D.R.N., who has had great experience in the Indian Archipelago, it appears that most part of the year a westerly current sets out of the Strait of Sunda. It is much to be wished that this important element in Indian navigation should no longer be left a matter of doubtful opinion.

and considered clear of dangers. A sunken rock was placed in the 'Great Sea Atlas' of Van Keulen, about 5 or 6 miles S.E. b. S. from the S.E. point of Krakatoa, called Hoedekens Kerk Klip, and said to have been afterwards seen by Lieut. M'Cluer; and Captain Drury, of the British Royal Navy, is said to have examined a rock S.S.W. of Krakatoa a few years ago, and found it to be near the water's edge. There is, however, every reason to believe that no rocks exist in those places, and that the channel is quite clear between the south end of Krakatoa towards the north point of Princes Island. *Hoedek Rock.*

68. Krakatoa Peak may be seen at a considerable distance, and serves as a fairway mark for ships to enter the Strait; the island extends nearly 5 miles N.N.W. and S.S.E., and 3 miles E. and W. It is elevated, steep-to, and its high peak stands $1\frac{1}{4}$ miles from its south point, a little more to the east than to the west; and N. b. W. $\frac{3}{4}$ W. from this peak there is another, but not so high. The high peak is in 6° 9′ 11″ S. and 105° 30′ 38″ E., or 1° 21′ 22″ W. from Batavia, according to the accurate observations of Lieut. Rietveld. It bears W.S.W. from St. Nicholas Point; N. $\frac{3}{4}$ E. from Second Point; W. $\frac{3}{4}$ S. from Fourth Point; and S.W. $\frac{1}{3}$ W. from Hog Point.* Horsburgh places the peak in lat. 6° $8\frac{1}{2}$′ S., and long. 105° $25\frac{1}{2}$′ E. The north coast of this island consists of rocky hills, without any vegetation whatever. The west and south sides also consist of a steep and rocky shore, and it is only on the eastern side that there is any level land. Krakatoa seems at present to be uninhabited; but Horsburgh says there is a fresh-water spring on its east side, opposite to the south point of Lang Island, although boats could only approach it at high water. *Krakatoa.*

69. Verlaten (or Forsaken) Island, close to the N.W. side of Krakatoa, is rocky, and separated from that island by numerous reefs, which make it dangerous and even impracticable for boats to pass through this channel. The S.W. side of Verlaten is fronted with rocks projecting a mile off, with their heads above water. A small island north of Krakatoa, and west of Lang Island, called the Polish Hat, forms, with these islands, a channel, which might be of some use to small ships with a fair wind, there being from 24 to 16 fathoms in it, and no dangers, except *Verlaten Island.* *Polish Hat.*

* Lieut. Melvill found, in 1840, the height of this peak to be 2,690 English feet by angular measurement.

Lang Island.

the reefs that project from both shores. South of the Polish Hat, and between Krakatoa and Lang Island, there is a narrow but deep channel, with 15 and 20 fathoms water, although obstructed by a reef which stretches off nearly a cable's length from Krakatoa. The reefs which surround Lang Island project on the N.W. side more than half a mile, but on the east and south sides not so much ; and at low water some rocky points show themselves above the reefs. Horsburgh says, that a reef projects from the south-east point of Lang Island, with 2 feet water upon it ; but Lieut. Rietveld, who surveyed these islands in 1841, found no rocks whatever at any distance from this island, notwithstanding that he made a most assiduous search for them, and made numerous soundings in those waters. Nearly $1\frac{1}{2}$ miles east from Lang Island there is a good anchorage in 20 or 30 fathoms, for ships detained by westerly winds.

Anchorage.

Bezee Island.

70. Poulo Bezee, or Tamarind Island, lying N. b. E., or N.N.E., 8 miles distant from Krakatoa, has also a high peak visible at a considerable distance, though easily distinguished from that of the latter, as that of Sebezee Peak rises abruptly at the southern extremity into a conical peak, sloping gently down to the northward. This peak is, according to Lieut. Rietveld, in 5° 57′ 55″ S., and 105° 33′ E., or 1° 19′ W. from Batavia.* On the west side a reef projects a short distance, some rocky points of which are visible above the water ; and on the N.E. side there are three small islands called the Huysman, Little Tamarind, and Gorts, all of which are surrounded by small reefs leaving banks between them. Bezee Island is inhabited by natives belonging to the villages in Lampong Bay ; it produces a certain quantity of pepper. The campong, or village, is on the east side, opposite Little Tamarind Island. All round the island there is good anchorage in from 15 to 25 fathoms water, and at the distance of a mile on the N.E. side there is an excellent road in 13 fathoms water, even with S.W. gales.

Sebezee Peak.

Passage between Krakatoa and Bezee.

71. The channel between Krakatoa and Bezee is 7 miles wide, and is frequently made use of by ships working out in the W. monsoon, in preference to the Great Channel, because here they have regular soundings from 18 to 30 fathoms, and,

*Lieut. Melvill found, in 1840, by angular measurement, the height of this peak to be 2,825 feet.

accordingly, may anchor when convenient. Hindostan Rock is the only known danger in this passage. According to Horsburgh a ship of that name struck upon it in 1791, and found on its summit, which was only 6 or 8 feet in diameter, 15 feet water, and 10 fathoms close to. From this rock Krakatoa bore S. b. W. $\frac{1}{3}$ W.; the west extremity of Verlaten Island S.W.; the east extreme of Lang Island S. $\frac{1}{4}$ W.; Bezee Island from N.E. to N. $\frac{1}{4}$ W.; the peak of Keyser Island W. b. N.; and the Zeeklip W. $\frac{1}{2}$ N., well open to the southward of Keyser Island. *Hindostan Rock.*

Lieutenants Rietveld and Boom tried to discover this rock, but without success, though they found another shoal with $5\frac{1}{4}$ fathoms, least water, consisting of hard rock and coral, and having all round 6 to 13 fathoms, soft mud and clay, and, at some distance, 19 fathoms. From this shoal Krakatoa bore S. b. W. $\frac{1}{3}$ W.; west extremity of Verlaten Island S.W.; south point of Zeeklip West, and the angle between the two extremes of Bezee Island 68° 30′. Some of these bearings agree exactly with the former, and it is more than probable that it is the same rock; but if not, we are convinced that the true Hindostan Rock must be very near to Rietveld's rock, possibly a little to the N.E. or E. of it. To avoid the Hindostan Rock or rocks, a ship ought to keep at least 2 miles from the south side of Bezee Island. Horsburgh gives, as the best mark for proceeding through this channel, never to bring Gap Rock open to the southward of Keyser Island. Between Hindostan Rock and the rock which is visible above water close to the south side of Bezee there are 10, 16, and 20 fathoms water, rocky bottom; but between this latter rock and the island the depths are 8, 9, 13, 11, and 8 fathoms, with foul bottom. Lieut. Rietveld saw here different patches of light-coloured water, owing apparently to an eddy current, and although they much resembled sunken rocks, all the casts of the lead indicated 16 to 19 fathoms.

72. The Zeeklip consists of three pyramidal rocks very near each other, and showing above the water; the southernmost is the largest, and is often called the Gap Rock, on account of a cleft in it. They are visible at a considerable distance, bearing N. $\frac{1}{2}$ E. and S. $\frac{1}{2}$ W. from each other, and are connected under water by reefs, upon which the sea continually breaks; they *Zeeklip, or Gap Rock.*

are very steep and inaccessible; and near them there are 26 and 30 fathoms, mud and clay. The Zeeklip bears N. $\frac{1}{4}$ E. from the west point of Verlaten Island; N. b. W. $\frac{3}{4}$ W. from the peak of Krakatoa; and W.S.W. $\frac{3}{4}$ W. 5 miles from Sebezee Peak.

Sebooko Island. 73. Sebooko Island, N.N.E. from Bezee, is not so high as the latter, and consists mostly of craggy hills; at present it is inhabited by the natives of Rajah Bassa, who cultivate some pepper plantations there. It extends $3\frac{1}{2}$ miles N. and S., and about a league E. and W. According to Lieutenant Rietveld and Boom, the centre of the island is in 5° 53′ 20″ S., and

Beschutter Islet. 105° 35′ 15″ E.* Close to the east side of Sebooko lies Beschutter Islet, which is high on the east side, with a reef on its south side, and forms with Sebooko a small bay, with 15 to 19 fathoms water, affording good anchorage for proas. A coral rock mid-channel between the east point of Sebooko and the north point of Beschutter, renders it dangerous to enter this litle bay from the northward with westerly gales; but there is a good road for large vessels in 11 and 13 fathoms, 1 or $1\frac{1}{2}$ miles from Sebooko, close to the east side of Beschutter Islet. From the numerous points of Sebooko reefs project, which in some places either show above water, or the sea breaks over

Reef West Sebooko. them, but they do not seem to extend far off. West from Sebooko, however, one reef does stretch off nearly 2 miles, very steep-to, but not dangerous, because the westernmost rocks of this reef rise to a considerable height out of the water, with a slight resemblance to Zeeklip. According to Lieutenants Rietveld and Boom's survey, in 1841, this rock lies W.N.W. from the south point of Sebooko; S.W. b. W. $\frac{1}{2}$ W. from its N.W. point; N. $\frac{1}{2}$ E. from the west point of Bezee, and $1\frac{3}{4}$ miles from the west side of Sebookoo.

The passage between Sebooko and Bezee Islands is not quite a mile wide, with soundings from 19 to 23 fathoms, hard sandy bottom; and the passage, N. of Sebooko, between it and the Tiga Islet, is $1\frac{1}{2}$ or 2 miles wide, with soundings from 20 to 34 fathoms.

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*Lieut. Melvill found, in 1840, the highest part of this island 1,416 feet, by angular measurement.

CHAPTER III.

North Coast of Java.
St. Nicholas Point to Batavia.

74. A ship bound to Batavia, being abreast of St. Nicholas Point, ought to steer E. ½ S., or E. by S., to pass Bantam Bay, mid-channel between Babie Island and the reef which projects from Pontang Point; with this course, Menscheneter Island and Great Kombuys will be seen a-head, and the Hoorn Islands in a N.E. or E.N.E. direction, visible in clear weather at the distance of 3½ or 4 leagues. The best track in the night is to keep in 14 or 15 fathoms, taking care not to borrow under 11 fathoms toward the Java Shore, nor to deepen beyond 18 fathoms in the offing. It would, however, be rather imprudent for strangers, in these waters, to keep under sail all night; it would be better to anchor, as moderate depths are found from here to Batavia roads. The tides set generally E. and W. along this part of the coast. *St. Nicholas Point, towards Menscheneter Island.*

75. Babie lies due north from Pontang Point, and according to the trigonometrical survey of Lieut. Staring, D.R.N., in 1841, the centre of the island is in 5° 48′ 45″ S., and 106° 20′ 9″ E., or 0° 31′ 51″ W. from Batavia; it extends 2½ miles E. and W. and a mile N. and S.; it is steep-to on all sides, except on the E.S.E., where a reef projects for a distance of 3 cables' lengths, and off the west point, at a distance of 1½ cables' lengths, are some rocks. Half a mile W. of the island there are from 17 to 15 fathoms; along the south side 24 to 17 fathoms; on the east side 20 fathoms, and along the north side from 25 to 11 fathoms water. In some old charts a rock is placed 4 miles S.E. from Babie, called Cheribon, but apparently does not exist, as Lieut. Staring carefully examined the place without finding it; and the native fishermen also, who are very well acquainted with the existing dangers, declared that they knew of no such rock. *Babie Island.*

76. The Bay of Bantam is about 8 miles E. and W., and 6 miles N. and S., and contains one large and several small islands, but no hidden dangers, consequently there is no diffi- *Bantam Bay.*

Bantam Bay. culty in navigating it. Paniang is the name of the large island; it is 2 miles in diameter, and lies in the western part of the bay. The island is bold to approach on all sides, except off the S. point; the passage on the west side of Paniang is also navigable, and is $1\frac{1}{2}$ miles wide, and has variable depths from 5 to 9 fathoms. S. b. W. from its S.W. point a small rock lies at a cable's length off, with 6 feet water. S.E. of Paniang, and very near it, there are two small islands, the reefs from which project to the southward half a mile, and consequently ought not to be approached within that distance. W.N.W. from the north side of Paniang, close under the Java shore, there are two small islands, of which the largest is called Poulo Kalie; and more toward St. Nicholas Point, $1\frac{1}{4}$ miles E. by S. from it, lies a third island, called Saleira,* between which and the two former may be found the place called by Horsburgh, Pangoriang. S.W. of Paniang, in Bantam Bay, there are three small islands, under the Java shore, the northernmost of which may be approached very near, there being at a distance of 2 or 3 cables' lengths 4 and $4\frac{3}{4}$ fathoms at low water, and this same depth will be found near the two southernmost islands at the distance of 5 or 6 cables' lengths, shoaling to $3\frac{1}{2}$ and 2 fathoms when approaching them. South of Paniang, 2 or $2\frac{1}{2}$ miles distant, lies a group of islands, called Koebor, Karang-Padang, Lima-jamboe, and Lima-klappa.† These islands are surrounded by reefs of one and two cables' lengths in extent; and between them, as well as west from them, and close in-shore, there are several coral banks, for which reason it is advisable, when entering the bay by the west channel, and having passed Paniang, to steer about S.E. in 7, 5, and $4\frac{1}{2}$ fathoms, along the north side of the northernmost island of this group, to the anchorage. Eastward of Paniang there are two islands, called Mujang Besar and Mujang Ketjil, with a free passage on both sides; but that between these islands and Paniang is preferable, having regular depths from 9 to 5 fathoms, and shoaling towards the anchorage to 4 fathoms. Both the Mujang islands may be approached very near, being clear of danger; and when passing to the eastward of them, the best way is to keep closer to them than to the Java shore, within a

* Sometimes called called Robben Island, and in old charts Notendop.
† In old charts called the Dutch Churchyard.

mile of which, in some places, there are but 3 fathoms at low water, while in the other channels from 3½ to 5 will be found.

77. The anchorage for large ships is W.S.W. or S.W. from Mujang Ketjil, and S. from the E. point of Paniang in 3¾ to 4¼ fathoms depth, at low water, and small vessels will find a good road in 3 fathoms, a mile distant from the beach, and half a mile east of Lima-klappa Island. Very near the shore are the two Dua Islands, with the depth of 2 or 3 fathoms near them. The flagstaff of the Fort is in 6° 1′ 39″ S., and 106° 12′ 41″ E., or 39′ 19″ W. from Batavia, according to the trigonometric survey of Lieut. Staring in 1841. The mouth of the river is closed by a mud-bank, upon which there are 2 fathoms water at the distance of a mile, and 1 fathom at the distance of 2 or 3 cables' lengths from it. In a S.S.W. direction from the centre of the bay stands the conspicuous hill of Pinang, or Mount Bantam, which is a good mark for vessels entering the bay. The mean rise and fall of tide is 2 or 3 feet, and at springs 5 feet, but with neap tides no rise is perceptible. *Anchorage.* *Tides.*

78. Pontang Point, forming the east side of Bantam Bay, is bluff, but a reef projects from it 1½ miles. This reef, which has been represented in former charts much too large, is steep-to, as the depths decrease speedily from 8 and 9 to 3, 1½, and 1 fathom, and stretches farthest in a N. b. E. direction from Pontang Point, where the limit of 3 fathoms lies about E. from the north point of Paniang island. When passing along this point it is advisable not to come nearer than 12 or 11 fathoms, before the east point of Babie Island is well to the westward of N. b. W. ½ W.* *Pontang Point.*

Between Pontang Point, and Kaik Point, the coast forms a bight, and in the middle of this bight are situated the village and the river of Tanara, from whence a reef with a tongue projects 3 miles off. Outside of this tongue the depths of 2 and 3 fathoms increase speedily to 7 fathoms and more; and the northernmost point of the tongue, in 3 fathoms at low water, bears E. ¾ S. from Pontang Point, and W. ¼ S. from Menscheneter Island. In this bight, close in-shore, lies the small island of Tiankier, in a N.N.E. direction, from which, at half or one mile distance, there are two coral banks above water. *Tanara Bight.*

* The northernmost point of the reef of Pontang lies 3 miles N.E. b. E. from the point itself, and S. ¾ E. from the East point of Babie.

Menscheneter Reef.

79. Menscheneter Reef projects N. of Kaik Point, and its northern edge consists of a steep sand-bank with rocky patches, called by the natives Karang Walla, and carrying a beacon without a cross. This beacon is placed due E. from the north point of Menscheneter Island, and in $2\frac{3}{4}$ fathoms, or 16 feet, at low water; the reef projects a little to the northward beyond the beacon, with depths of 3 to $1\frac{1}{2}$ fathoms, so that it is advisable to keep at least half a mile outside of the beacon; and the more so, because the depths increase speedily to 5 and 7 fathoms in the offing: the northern boundary of the bank in 3 fathoms bears E.N.E. $\frac{1}{2}$ E. from the north point of Menscheneter. This island is surrounded by a narrow reef, which is very steep-to; and between it and the beacon there is a very narrow channel, fit for proas, with soundings from 4 to 11 fathoms.

Struisvogel, or Ostrich Bank.

80. Struisvogel, or Ostrich Bank, consists of five different coral rocks, stretching N. and S. about a mile, and E. and W. a little more than half a mile; on the shoalest place there are 2 fathoms at low water, but close to the bank 13 and 17 fathoms; and therefore it should be approached with great caution; it bears N.W. $\frac{3}{4}$ N. from the middle of Menscheneter, and S. $\frac{1}{2}$ W. from the west point of Great Tidong, the westernmost of the Hoorn Islands. Tangara Rock rises suddenly out of 13 and 14 fathoms, mud, having upon its shoalest spot, 3 fathoms, a beacon with a cross, bearing N. $\frac{7}{8}$ E. from the middle of Menscheneter, and W.N.W. $\frac{3}{4}$ W. from the middle of Great Kombuys. Half way between Struisvogel and Tangara, or $1\frac{1}{2}$ miles N.W. $\frac{1}{4}$ W. from the latter, there is another small coral rock called the Laut; the least depth upon it is $3\frac{3}{4}$ fathoms at low water, and close to it, from 12 to 17 fathoms, soft ground.

Tangara Rock.

Laut Rock.

Ships may approach Batavia by different channels between these rocks and islands, but that which is called by Horsburgh the Dutch Channel, is the most frequented. As these channels are very narrow, it is advisable to anchor during the night, unless well acquainted with the dangers, and having a clear moonshine to see them. They bear the names of the Inner, Middle, and Outer Channels.

Inner Channel to Batavia.

81. The Inner or Horsburgh's Dutch Channel may, with a good look-out, be considered as free from dangers. To proceed through it, a ship should pass between Menscheneter Island

and the Great Kombuys, due attention being paid to Laut, Struisvogel, and Tangara Rock, and not to borrow too much on the Java shore toward the beacon* of Menscheneter Reef. A good berth should also be given to the Great Kombuys, as a sunken reef projects to a considerable distance from its western point. Upon the extreme point of this reef, in $2\frac{1}{4}$ fathoms at low water, there is a beacon with a cross, from which the south point of Great Kombuys bears S.E.b.E. $\frac{7}{8}$ E., and its N.W. point E.N.E. $\frac{1}{8}$ E., about a mile distant. Between this reef and that of the Menscheneter the channel is, in its narrowest part 2 miles wide, with depths from 8 to 12 fathoms. Between Kaik Point and Ontong Reef, there is a bight, in which the depths decrease regularly towards the Java shore, except near a rocky shoal off Serang Point, stretching E. and W. one mile, and having in some places $2\frac{1}{4}$ and 2 fathoms water; this shoal bears south from Great Kombuys, E.b.N. from Kaik Point, and S.E.b.E. from Menscheneter Island, the depths increasing speedily toward the offing to 7 and 9 fathoms.

Great Kombuys Reef.

Serang Shoal.

82. The reefs which surround the Great and Little Kombuys project very little to the southward, but between these islands lies the dangerous Loembong, a rock only a ship's length in extent, and carrying only $2\frac{1}{4}$ fathoms at low water. On the middle of it stands a beacon, with a cross bearing W.S.W. from the south point of Little Kombuys, and S.E.b.E. $\frac{3}{8}$ E. from the south point of Great Kombuys. To the southward of Little Kombuys there is another shoal also in the channel, with $3\frac{1}{2}$ fathoms at low water, and from which the beacon of Mynder Shoal bears E. $\frac{3}{4}$ S., and the N. point of Middelburg E. $\frac{1}{2}$ S. Mynder Shoal is $1\frac{1}{2}$ cables' lengths in diameter, and has 2 fathoms depth upon its shoalest part. On the middle of this small shoal there is a red beacon with a cross, from which the N. point of Middelburg bears E. $\frac{1}{4}$ S., the east point of Little Kombuys N.W. westerly, and Ontong beacon S.E.b.E. $\frac{1}{4}$ E. South-east of Mynder Shoal lies another small but dangerous

Loembong Rock.

Mynder Shoal.

* Vessels proceeding through any of these channels, should be aware that the beacons are often stolen by the fishermen, or washed away by the sea, and not replaced for a great length of time; although general orders have been given that, whenever one of these beacons disappears, a piece of bamboo, with a basket, should be immediately fixed in its place. They are not conspicuous, consisting only of a single pole, with a small piece of wood in the form of a cross nailed on some of them.

shoal in the common track, discovered in 1840 by Lieutenant Staring, D.R.N., and mentioned in few of the former charts. This shoal, called Kenappan by the natives, has $2\frac{1}{2}$ fathoms on it at low water, and close around it 6 fathoms, which quickly increase to 7 and 9 fathoms. A beacon, without a cross, has been placed on this shoal, from which the beacon of Ontong Reef bears S.E.b.E. $\frac{3}{4}$ E., Mynder Shoal beacon in one with the S.W. point of Little Kombuys, N.W. $\frac{3}{4}$ W., the south point of Amsterdam, just opening clear of the south point of Middelburg Island, E. $\frac{1}{2}$ S., and the north point of Middelburg E.N.E. $\frac{1}{2}$ E.* Besides this shoal, there are some others to the westward of Middelburg, but none of them in the common track of ships. Upon one of them, however, there is a beacon with a cross, it is called Papedio, and Middelburg bears from it from S.E.byE. $\frac{7}{8}$ E. to E.S.E. $\frac{1}{2}$ E. A ship beating up along the south side of the above-mentioned dangers should consider it as a fair-way mark, not to bring the south point of Middelburg Island to the southward of E. $\frac{1}{4}$ N., and to keep the south point of Amsterdam always well open south of Middelburg.

Kenappan Shoal.

Middelburg Reef.

83. The passage between Middelburg and Ontong Reef is very narrow (not quite half a mile), in 8 or 10 fathoms water. The reef which borders the south coast of this island is very narrow, and carries two beacons, with a cross each, at its extreme ends.

Ontong Reef.

Ontong Reef is steep at its northern end, and consists there of a hard sand-bank with some rocks, with only half a fathom at low water; the beacon with a globe, which stands upon its northern edge 20 feet above high water, ought not to be approached nearer than in 8 or 9 fathoms. At the eastern side, abreast of the island Schiedam, Ontong Reef is more sloping, and may be more nearly approached if the lead be kept briskly going. A ship, after passing Middelburg, should steer S.E., S.E. b. S., and S.S.E., edging away for Onrust Island, but borrowing on the Java shore into 5 and $4\frac{1}{2}$ fathoms to avoid the shoals north-west of Onrust. Kelor Rock, or the Stone of Onrust, is the westernmost of several small coral rocks which lie off the north point of Onrust; they are small and steep-to; and on the shoalest place there are $2\frac{1}{2}$ fathoms near

Kelor, or Onrust Stone.

* A black pole with red crossings has been recently placed on the cliff Tanda Kenappan.

the beacon with a cross, which stands on its north-western extremity, about 2 cables' lengths N.W. from Onrust, and which must be passed on its western side. The Mathilda Rock lies less than half a mile W. $\frac{1}{2}$ N. from the former, and carries a beacon, without a cross, on its N.E. side in 3 fathoms depth, but at low water there is no more than 2 fathoms upon its shoalest spot. The channel runs betwixt these two last-mentioned rocks, and it is advisable not to pass to the eastward of Kelor Stone, nor between the Islands of Onrust, Kerkhof, and Purmerend, on account of the numerous shoals in that space. If a vessel should be working between Schiedam and Onrust she will have to look out for a small rock, discovered, in 1847, by Lieut. Tengnagel, D.R.N., from whence Onrust bears south, easterly, and Mathilda Rock beacon S.W. $\frac{1}{4}$ W. It carries 3 fathoms at low water, but there are $6\frac{1}{2}$ fathoms all round it and close to.

Mathilda Rock.

Tengnagel Rock.

84. It is proper to mention here for the benefit of vessels repairing at Onrust, and wishing to rate their chronometers, that the Flagstaff upon the island is in 6° 2′ 20″ S., and 4′ 27″ W., from the Time Ball at Batavia, or in 106° 47′ 33″ E. of Greenwich.*

Chronometers rated at Onrust.

85. When past the Kelor, or Stone of Onrust, steer to the westward of Onrust and Kuiper Islands, giving a proper berth to a reef which projects 1 or $1\frac{1}{2}$ cables' lengths from the N.W. side of Kuiper, and of which the limits are indicated by two beacons without crosses. The S.W. side of Kuiper Island may be approached without danger ; but do not keep too much to the Java side, on account of a small rock, called Karang

Kuiper Island.

Karang Kuiper.

* H.M. Sloop Pelican was careened at Onrust in September, 1844. Captain Phillip Justice, at that time commanding the above sloop, says, "The stones for building the dock at Onrust have arrived from Europe. The arsenal has every convenience for heaving down, and every store that can be required, with 24 feet water alongside the jetty ; capstans are placed at proper distances, and three or four vessels might be hove down at a time : the difficulty is to procure workmen, and those that can be obtained are Chinese. The island is well superintended by Commandant Muller, so that during a stay of nine days there, no spirituous liquor found its way to the island, and such vegetables and fruit only as are wholesome are permitted to be landed. There are several long sheds where the rigging can be refitted, and the crew of the Pelican and the invalids derived great benefit to their health during our stay."—*Remark Book of Commander Philip Justice, H.M. Sloop Pelican*, 1844.

Kuiper, which bears S.S.W. half a mile from the island, with $2\frac{3}{4}$ fathoms on its shoalest part, at low water. A little way further to the S.S.W. there is a sand-bank with one fathom water upon it.

Reigersdaal and Rynland Shoals.

Soon after having rounded Kuiper steer S.E. b. E. towards Batavia Road, and the beacons of Reigersdaal and Rynland Shoals will be seen ahead; pass between them in 6 to $7\frac{1}{2}$ fathoms water right toward the shipping in the road, and anchor in 6 or 5 fathoms, mud, south from Rynland beacon. The western passage between Reigersdaal and the main is not to be recommended, on account of two shoals bearing S.W. from it, upon one of which there are $3\frac{1}{4}$ fathoms water.

The Outer Channel.

86. That which is called the Outer Channel leads along the north side of the Great and Little Kombuys, as a ship coming from the westward may pass on either side of these islands. Between Struisvogel, or the Ostrich Shoal, and the Hoorn Islands, it is 5 miles wide; and those islands may be approached from the southward to within half a mile, as their reefs do not reach farther off than $1\frac{1}{2}$ cables' lengths. To the westward, however, there is a rock called the Karbau, about a mile W. $\frac{2}{3}$ N. from the west point of Tidong, the westernmost of the Hoorn Islands, on which there is only one fathom at low water. A leading mark to pass to the northward of Struisvogel, or Ostrich Shoal, and of the Laut and Tangara Rocks, is to keep the Little Kombuys well open to the northward of the Great Kombuys. A ship may pass also to the southward of the Struisvogel, between it and Tangara Rock, but in this case the latter must be approached within one mile distance, on account of the Laut Rock, which is described in Art. 80. The passage between Tangara Rock and Great Kombuys is also safe, only taking care to remain full a mile from the west point of that island, on account of the small coral rocks which project therefrom.

Karang Karbau.

Hoorn Islands.

87. The Hoorn Islands are four in number, stretching W. b. N. and E. b. S. 4 miles; the two westernmost are called the Great and Little Tidong, and the two easternmost, bearing north and south from each other, are called Pajang Islands. Each of these groups is surrounded by reefs, which fall partly dry at low water, and which are very steep-to at the outside. The reef round the Tidongs projects but very little to the

southward; to the northward about $1\frac{1}{2}$ cables' lengths, and to the eastward about 3 cables' lengths, while that which surrounds the Pajangs projects north and south about 1, and east and west 2 or 3 cables' lengths. The soundings to the southward of the Hoorn Islands are, very near them, 30 and 40 fathoms, and, in the channel between them and the Ageneiten Islands, which is full 2 miles wide, 35 to 50 fathoms. *Ageneiten Islands.*

These last-mentioned islands are a little more than 4 miles north of the Kombuys Islands, and are all very small islands, Poulo Parrie being the largest and easternmost; they are connected to each other by reefs, partly visible above water and extending in some places three-quarters of a mile. One mile east from Poulo Parrie are two small shoals very near each other, called the Jonks, one of which shows above water, and upon the other there are 2 fathoms at low water. The fair way of the Outer Channel, between the Ageneiten and the Kombuys Island, is close along the north side of the latter, in order to avoid a patch of small coral rocks, which lie $2\frac{1}{2}$ miles north of Little Kombuys, and nearly mid-channel, upon the shoalest part of which there are $3\frac{1}{4}$ fathoms at low water.

88. Being so far advanced that Little Kombuys bears S.S.W. steer N.E. or N.E. b. E. till Dapoer Islet bears E. b. S., and then make right for it, because a straight course from the Little Kombuys toward Dapoer would lead among the coral rocks which lie N. and N.W. from Middelburg, on some of which there are not more than $2\frac{1}{2}$ to 3 fathoms at low water. The northernmost of these rocks bears W. $\frac{3}{8}$ S. from Dapoer, E.N.E. $\frac{3}{8}$ E. from the Little Kombuys, and N. $\frac{1}{2}$ W. from Middelburg. *Dapoer Islet.*

89. A ship coming from the Little Kombuys may also pass between the shoals N.W. of Middelburg, and along the north side of this island as well as of Amsterdam; but she ought to have a steady breeze, for fear of being taken aback between the reefs, and it will always be prudent to have a boat a-head sounding. If a boat cannot be spared, and if she has a leading wind through this channel, she will avoid the shoals by steering (as soon as Little Kombuys bears S.S.W.) a S.S.E. or south-easterly course till the south points of both Kombuys Islands are in one; she may then steer about E. $\frac{3}{4}$ S., so as to preserve this mark till she is north of Middelburg, by which process she

will pass over a $4\frac{3}{4}$ fathoms rock, but at the same time she will be clear from all other dangers upon which there is less water. One of these dangers is a $3\frac{3}{4}$ fathoms rock lying north half a mile from the east point of Middelburg; the channel is to the north of this rock, and the fair way is at the distance of a mile from Middelburg. From between Amsterdam and Dapoer Island, the Great Channel runs east towards Edam, and then south between Edam and Enkhuizen to the eastward and

Dapoer Reefs. Haarlem, Monnikendam and Hoorn to the westward into Batavia Road. Dapoer Island is surrounded by a reef, and at the distance of 2 cables' lengths N.E. and S. b. E. from it lie

Dapoer Rocks. two separate coral banks, with $1\frac{1}{4}$ and $2\frac{3}{4}$ fathoms upon them at low water, for which reason Dapoer should not be approached within half a mile distance on these bearings.

Edam Reef. 90. North of Edam, at little more than half a mile distance, there is a coral reef of considerable extent with not more than half a fathom of water. The middle of Edam Island lies in 5° 57′ 40″ S. and 106° 54′ E., or 2′ 0″ E. from Batavia.

Monnikendam Reef. 91. Monnikendam Reef lies E. b. S. from Haarlem Islet, and N. b. W. from Hoorn; it falls partly dry at low water, but has in some places 2 and 3 fathoms. From Amsterdam a vessel may steer also S.E., passing betwixt Rotterdam and Haarlem, and along the Wapen of Purmerend Shoal to the roadstead; and this passage is generally called the Middle Channel.

Middle Channel. To take this channel, the vessel should not borrow too much on the eastern shore of Amsterdam, as a reef projects from that side 2 cables' lengths. Two and a half miles further, mind the

Obie Rock. small rock, called Obie, lying half a mile east of Rotterdam, with a beacon and cross on its east point, in 2 fathoms depth. The channel leads to the eastward of this rock, between it and

Ayer Bank. Ayer Bank, which has $2\frac{1}{2}$ fathoms water upon it at low water, and is indicated by a beacon with a cross, which bears west from the north point of Hoorn Island at $2\frac{1}{2}$ cables' lengths distance. Between Rotterdam and Kerkhof there are several

Rocks between Rotterdam and Kerkhof. small coral rocks with $1\frac{1}{4}$ to $3\frac{3}{4}$ fathoms upon them, for which reason a ship should not borrow too much towards that side of this channel. The easternmost of these rocks bears N.N.E. from Kerkhof, S.E. from Rotterdam, and S. by E. from Obie

Wapen of Purmerend or Ialan Rock beacon. The Wapen of Purmerend, or Ialan Rock, is about 2 cables' lengths in extent, consisting of large rocks with 2 and

3 feet water upon them, and close-to, 8 fathoms; it has a beacon with a cross at its N.E. point, which bears E. $\frac{1}{2}$ S. from Purmerend, and S. $\frac{3}{4}$ W. from Hoorn.

92. Saket Reef bears S. b. E. half a mile distant from Purmerend Island; it is 2 cables in length, and carries 2 fathoms water on its shoalest part at low water, as well as a beacon with a cross on its S.W. point. There are two other reefs hereabout, one 2 cables' lengths to the east, and the other half a mile S.E. from Purmerend, upon each of which, at low water, there is but half a fathom depth. *Saket Reef.*

93. The Eastern Channels leading to Batavia Road are very safe and convenient. Those between the islands of Edam, Alkmaar, Enkhuizen, and Leiden, have soundings of 14, 12, 11, and 10 fathoms; the channel to the southward of Leiden is also safe, if attention is paid to the shoals which lie between it and the main, and to a small coral rock, $2\frac{1}{2}$ cables' lengths east of Leiden, upon which the Dutch ship Amstel struck in 1842. This rock was then surveyed by Lieut. M. L. Kool, D.R.N., who found it to be two ships' lengths in diameter, carrying $1\frac{1}{2}$ fathoms, and speedily deepening to 3, 5, 7, and 9 fathoms. From the shoalest spot, the north point of Leiden was in one with the middle of Hoorn Island; the south point bore W. $\frac{3}{4}$ S., the west point of Edam, just behind the west point of Alkmaar, and the east point of Edam open to the eastward of Alkmaar. The rock is 218 yards from the reef round the island, and between them there is a channel of 6 and 7 fathoms depth. The best track to avoid this rock is not to approach Leiden Island nearer than a mile, and to keep Alkmaar outside of Edam. *Eastern Channels to Batavia.* *Rock off Leiden.*

94. The first shoal between Leiden and the Java shore is Vader Smit, a coral reef above water, with a beacon and cross on its N.E. point, which bears S. $\frac{3}{4}$ E. from Leiden, and N.W. $\frac{3}{8}$ N. from Priok Point. *Vader Smit. Shoal.*

95. One mile east from Vader Smit, and S.E. b. S. from Leiden, Lieut. Eschauzier, D.R.N., discovered, in 1840, another rock, with $2\frac{1}{4}$ fathoms at low water. This rock is very dangerous to ships proceeding through this channel, and to avoid it they should pass $1\frac{1}{2}$ or 2 miles to the eastward of Vader Smit. About a mile N.W. from Priok Point there are two other patches of coral rocks, in 3 and $3\frac{1}{4}$ fathoms water. The *Rock East of Vader Smit.* *Priok Rocks.*

best channel is to the southward of Vader Smit, in 5½ and 6 fathoms. The coast of Java, to the eastward of Priok Point, may be approached safely by the lead to 6 fathoms, as the soundings decrease regularly; though off Krawang Point, it is better not to borrow nearer than 8 fathoms, as the depths decrease there very quickly to 3 fathoms.

Nierstuk Shoal.

96. Nierstuk is a rocky shoal of about 2 cables in length, usually covered by breakers, having 2 feet depth at low water. Although not indicated by a beacon, it is easily discovered by a discolouration of the water, or by the breakers which show with the least wind. It bears W.S.W. ½ W. from Vader Smit, and about S.S.W. from Leiden. The passage between it and Vader Smit is more than a mile wide, with 6 and 7 fathoms depth. The passage between Nierstuk and the Shoals of Neptunus, and Pas-op, is more than half a mile wide, with 6 or 7 fathoms deep.

Neptunus Shoal.

The Neptunus consists of large rocks with 2 feet water; it is 1 or 1½ cables' lengths in diameter, and is marked by a beacon,

Pas-op Shoal.

with a cross on its western extremity. Pas-op Shoal is very small, with 14 feet on its shoalest place, and 5 and 6 fathoms close to it; it bears E. ½ N. a full mile from Rynland Shoal, and carries a beacon with a cross. S. b. W. ⅔ W. from the beacon of Pas-op, and E. ¼ S. from that of the Rynland Shoal, there is a small coral rock with 2½ fathoms at low water, and

Rynland Shoal.

close around 5, 6, and 7 fathoms. Rynland Shoal is very small, and has 15 feet water on its shoalest part, which is shown by a beacon with a cross bearing N. b. W. ½ W., 1½ miles distant from the extreme end of the pier of Batavia River. The channel between Rynland and Pas-op Shoals is a mile wide, and 6 to 8½ fathoms in depth.

Time Ball at Batavia.

97. Batavia Observatory, where a Time Ball has been exhibited since 1839, stands east, 3,133 yards from the Boathouse near the river, or a little more than a mile and a half from the pier-head. The geographic position of the Time Ball is in 6° 8′ S., and the assumed longitude 106° 52′ E., 7 h. 7 m. 28 sec. in time. The latitude was determined by taking the mean of some hundred observations of the sun, in and near the meridian at the Observatory, and on board of the guardship in the Road.

Longitude of Batavia.

The longitude has not yet been definitively ascertained. The transit of Venus, observed in 1772 by the Dutch astronomer Mohr, and computed by Ferrer, gave 106° 54′ 59″. Mohr

afterwards, by eclipses of Jupiter's first satellite, by two lunar eclipses, and by an occultation of a star, pronounced it to be 106° 50′ 8″. M. Rossell, by an occultation in 1794, at Sourabaya, and carried from thence to Batavia by chronometers, found it to be 106° 48′ 50″. A great number of lunar distances, E. and W., by Horsburgh, gave 106° 54′ 30″. Lieutenants Gregory and Melvill, D.R.N., by Jupiter's satellites, in 1843, inferred that it was 106° 50′ 1″. And, finally, Lieutenants Groll and Smits, D.R.N., in 1847, obtained 106° 45′ 47″, from an eclipse of the sun. The result of all these observations is, as above stated, 106° 52′ E., and has been adopted by "The Commission for correcting the Indian Sea Charts," till more refined astronomic observations shall furnish more certain data.* The Time Ball is hoisted every day at 5 minutes before noon, Batavia mean time, half-way up the pole; at two minutes to mean noon it is hoisted to the top, and precisely at Batavia mean noon it falls. For those ships that wish to rate their chronometers according to Greenwich mean time, the moment of 6 o'clock A.M., Greenwich mean time, is indicated in the same way; the ball being hoisted half-way up at 1 h. 2 m. 28 s. P.M., Batavia mean time; and at 1 h. 5 m. 28 s. to the top; and exactly at 1 h. 7 m. 28 s. P.M., Batavia time, which corresponds to 6 o'clock A.M. Greenwich time, it falls.

Batavia Road.

98. The Bay of Batavia is very capacious, being from Ontong to Krawang Points about 7, and from the pier-head to Edam Island about 3 leagues. The bottom consists of soft mud, but in the vicinity of the shoals, rock. The soundings are from 10 to 4 fathoms, regularly shoaling towards the shore; and generally throughout the bay at a mile distant from the beach there will be found 3 fathoms. Except in a few places, the Road is shut up by a chain of islands, by which ships are always protected against a dangerous swell setting in. The Road may be considered as very safe, for although ships do roll considerably in the strength of the western monsoon, and are consequently compelled to strike their top-gallant masts and yards, no danger is to be apprehended of driving, from the excellence of the holding-ground.

* See a discussion on the longitude of Batavia, by the author of this work, in "Le Moniteur des Indes," tome iii. p. 27. La Haye, 1848.

Anchorage.

99. The usual place for large ships to anchor is in 5 or 6 fathoms on a mud bottom, about a mile distant from the pier-head, and between S.S.W. and S.E. from Rynland Beacon. They seldom moor, as the anchors generally bury themselves in the soft mud, for which reason it is advisable to sight the anchor sometimes during a long stay. Small vessels may anchor nearer to the pier-head, in 4 or 3½ fathoms. There used to be a bar just outside of the middle mouth of the river, with only 2 or 3 feet depth at low water upon it; but since the pier was lengthened, and the river shut off by a dike to turn the current, this bank has disappeared. In the western monsoon there is sometimes such a heavy swell which breaks at the mouth of the river, that proas are unable to get out, and ships' boats may be exposed to great danger if sent on shore after a blue warning flag is displayed at the boat-house.

100. Most of the islands and shoals lying near the Road consist of coral with white sand above water, and are covered with various kinds of trees; they are steep-to, and it would seem that some of them increase in extent, so that it will be necessary to re-examine the depths from time to time; and the more prudence is recommended to those who try to pass over shoals, on which but just sufficient depth is indicated. The coast of Java is generally flat, but 30 miles inland from Batavia the Goenong Gedeh,* or the Blue Mountains, rise to a considerable height. From the common anchorage near Rynland Shoal, the highest peak of these mountains, called Pangerango, bears S.b.E. ¼ E., the highest or easternmost peak of Salak S. ½ W., and Mount Karang, in the Bantam residency, W.b.S. According to the trigonometrical survey these peaks are in latitude 6° 45′ 15″, 6° 42′, and 6° 15′ 45″ S., and in longitude 107° 1′ 45″, 106° 47′, and 106° 6′ 45″ E.

Gedeh Mountains visible From the Road.

Tides.

101. By accurate observations, made in 1839 at Onrust, it seems that the tides and the rise and fall of water are not

* Lieut. Melvill found, in 1841, by angular measurement, the height of these mountains above the surface of the sea; viz.:

Pangerango	9,954 feet.
Salak	7,322 „
Karang	6,014 „

In the western monsoon their peaks may be seen from the Road in the morning, but are seldom visible during the eastern monsoon.

subject to fixed rules. In the eastern monsoon, it appeared to be high water there in the evening; and in the western monsoon in the forenoon; the time of high water at full and change being generally 10 o'clock P.M. in the eastern monsoon, and at 10 A.M. in the western monsoon. The mean rise and fall was 2 feet, and the maximum and minimum 4 feet, and scarcely an inch.

102. The variation of the compass is at present 1° 45′ E., as computed from a great number of observations on board H.N.M. ships; thus showing that when compared with former years, it has changed from W. to E., and is still increasing in the latter direction. The inclination of the needle was in 1828, 25° 26′ N. The mean height of the mercury in the barometer is 29·67 inches. The influence of the weather upon the barometer is very small; it being seldom raised by continued dry weather, or depressed by a boisterous moist temperature, more than from 1 to 3 lines above or below the mean. The mean temperature at Batavia in the morning and evening is from 70° to 74°, and at noon from 84° to 86° Fahrenheit; although it occasionally rises to 90° or 95°. Batavia Road is rendered unhealthy by the pernicious influence of the noxious vapours generated along the marshy coast and the shoals at low water, which are uncovered, and it seems to be chiefly in the shifting months of the monsoons that the Batavia fever is most frequent. Ships, therefore, intending to make a long stay should not anchor too near the shore.* *Variation of Compass.*

There is at Batavia an excellent establishment for purifying the water for the shipping in the Road; this water is conveyed on board, at fixed and moderate prices, in whole or half leaguers, or in proas fitted with tanks. *Fresh Water.*

* A lighthouse is in the course of erection at Batavia.

By Order of the Netherlands Government, the following notice has been given to Vessels frequenting the anchorage of Batavia:—

Whenever the weather is so boisterous, especially during the western monsoon, that any attempt to land at the Jetty, at Batavia, or along the shore, would be attended with danger; a blue flag will be hoisted at the Mizen of the Guard Ship, and similar flags will also be shown at the Observatory, as well as at the palace of Wettereden. The Signal No. 5681, in Marryat's Code, eleventh edition; "there is too much surf to land," will likewise be displayed at the Observatory

CHAPTER IV

From Batavia and the Strait of Sunda, to the northward.

South-watcher.

103. The South-watcher lies in 5° 42′ 7″ S., and 106° 46′ 10″ E., or 5′ 50″ W. from Batavia, and bears N. $\frac{1}{8}$ W. 5 leagues from Dapoer Island, from whence it is just visible, but from the deck of a large ship the island may be discovered in clear weather at the distance of 5 or 6 leagues. It is small, thickly covered with wood, and surrounded by a reef which projects to the N.E. about 450 yards, and to the S. and W. about 100 and 220 yards. This reef is very steep, with 8 fathoms close to, and at two boats' lengths 24 and 23 fathoms, mud; it cannot, therefore, be approached by the lead. From the deck of a ship off the South-watcher, Dapoer and the Thousand Islands cannot be seen, but from her tops they will be just visible.

Thousand Islands.

104. The group called the Thousand Islands really consists of about sixty. The southernmost part is very little known, and although there are some safe channels, which were passed in 1842, by Lieut. P. T. Clyner, in H.N.M. schooner Zephyr, with the assistance of a pilot, who was well acquainted with these waters, it is not advisable for a stranger to enter them, as they abound with shoals, and having never been surveyed, there are no charts of them whatever. Lieut. P. T. D. Keuchenius, D.R.N., in 1840 sailed in a gun-boat along the western side, and anchored near Poulo Katok in 22 fathoms. From this island he steered N.b.W., leaving Estam or West Island to the westward; he then proceeded to the northward, and rounded the northernmost of them, and returned along their eastern side to the southward, till the North-watcher bore between N.N.W. and N.W.b.N., where he opened the channel through which Horsburgh says that Lieut. Harding, B.R.N., passed in 1830. According to him, this channel, which lies between the four north-westernmost islands and the eastern dense group, was about 5 miles wide and seemed safe, with soundings from

16 to 20 fathoms in the direction of S.W. and N.E. Captain de Vriese alleges that the easternmost of all these islands bears N.W. ¾ N. from the South-watcher, and is in 5° 29′ S.; that the north-easternmost of them bears N.b.W. from the same, and lies in 5° 27′ S., and that the northernmost bears nearly W.N.W. from the N.E. Island, and South from the North-watcher, and is consequently in 5° 24′ S., and 106° 32′ E. In former charts the northern limit of the Thousand Islands was placed too far south, and their direction too much to the westward.

Nassau Ledge.

105. Nassau Ledge was surveyed, in 1841, by Lieut. T. Groll, in H.N.M. steamer Etna, with great accuracy. It bears N.E. ½ N. from Dapoer Island, S.E. ¼ S. from the South-watcher, and N. b. W. from Edam; according to which bearings the true position of this shoal is 5° 49′ S., and 106° 52′ 35″ E., which is about 4 miles S.E. from the position in former charts. The natives, who are commonly very well acquainted with the existing dangers, assert that there are no other shoals than this ledge between Edam and the South-watcher, which need be avoided by ships, although Lieut. Groll found some patches with 5½ and 7 fathoms to the westward of Nassau.* The shoalest ledge upon the Nassau was 1¾ fathoms, according to Lieut. Groll, and round it 3 and 4 fathoms, coral bottom. It stretches E.N.E. and W.S.W. about 300 yards, with 17 fathoms; very near it, and a little farther off, 16 fathoms, mud with shells. From this ledge Alkmaar was just concealed behind Edam, so that they afford a fair mark to avoid it by keeping these islands well open of each other.

North-watcher.

106. The North-watcher was determined, in 1841, by Captain de Vriese, to be in 5° 12′ 7″ S., and 106° 32′ 13″ E., or 19′ 47″ W., from Batavia by chronometer; it is a small island covered

* Capt. F. Johnson, of the British ship Recovery, passed in 1841, at 6 miles S.E. b. E. ½ E. from the South-watcher, a shoal on which he thought there were not more than 2½ fathoms. It is very possible that this was one of the patches with 5½ and 7 fathoms mentioned above. And Capt. F. A. B. Sietzes, of the Dutch ship Pieter Floriszoon, in 1845, sailed over one of these patches. When Edam bore S.S.E. and Dapoer S.W. b. S., and therefore when the Nassau Ledge bore N.E. b. E. 2 miles, she suddenly shoaled from 17 to 6 fathoms, but by steering in several directions, to avoid other apparently shoal spots, she regained her deep water, 17 fathoms, when those islands bore S.E. b. E. and S.W. b. W.

with trees, and surrounded by a reef which projects from the southern extremity to the distance of half a mile. In clear weather this island will be seen at 6 or 7 leagues distance, and on its western side it may be approached within 2 or 3 miles.

Omega Bank.

107. The Omega Bank was discovered by the American ship Omega, Captain Russell, having struck on it in 1835; she received much damage, and was hove down at Onrust. According to the captain, this coral bank is steep-to, about 60 or 65 yards broad, and 150 or 200 yards long, in a direction of N.N.E. and S.S.W., and on its shoalest places there are from 9 to 12 feet water. This dangerous bank lies $1\frac{1}{4}$ miles about E. b. S. from the North-watcher, and it is therefore advisable to give that island a berth of at least 4 miles on its eastern side. Between the bank and the island there is a narrow channel with 11 and 12 fathoms water.

Arnemiden Bank.

108. The Arnemiden Bank, surveyed in 1841 by Lieut. Groll, is in 5° 12′ 22″ S., and 106° 49′ 17″ E., and bears east 6 leagues distant from the North-watcher. The part which remains dry at high water is 76 yards long, and, being elevated 6 or 7 feet above the surface of the sea, and composed of white coral sand, it may be seen 3 miles off. At its N.E. side a tongue that projects about 220 yards, falls nearly dry at low water, and the whole bank consists of rocks, the points of which are often seen above water. When approaching the bank the soundings *increase* from 11 and 12 to 15 and 17 fathoms soft ground, mixed with coral sand.

Pruissen, Molenwerf, and Brouwer Banks.

109. Lieut. Groll was also ordered to search for the Pruissen, Molenwerf, and Brouwer Banks. He cruised accordingly during four days over the space of 4 leagues south, and 4 leagues east of the Arnemiden Bank, but found regular soundings from 11 to 13 fathoms, but increasing in a south-easterly direction to 20 fathoms, and only one shoal, called by him the Etna, which, although covered by the sea, was very probably not far below its surface, as the swell occasionally broke upon it. It was impossible for a boat to go upon the shoal to sound, but close to were 20 fathoms mud, with much shells and coral sand. At $1\frac{1}{2}$ cables' lengths there were 13 fathoms, same bottom; although less sand when farther from the shoal. The position was determined to be 5° 17′ 18″ S., and 106° 59′ E. by chronometer. Although Lieut. Groll found no other danger,

Etna Shoal.

the three above-mentioned shoals remain still doubtful, and are therefore inserted in the chart after the best reports. The Pruissen is said to be in 5° 17′ S., and 106° 47′ E.; Molenwerf in 5° 14′ S., and 106° 59′ E.; and the Brouwer in 5° 22′ S., and 106° 57′ 30″ E. These dangers seem to be covered always by breakers, and at times visible above water.

Sireen Rocks.

H.N.M. schooner Sireen, commanded by Lieut. J. Daansen, in 1838, was steering N. b. W., at the distance of 6 or 8 miles to the eastward of the Thousand Islands, when she came to a patch of breakers; and, noon occurring soon afterwards, its latitude was determined to be 5° 19′ 30″ S. If this should prove to be the Pruissen of the charts, it will show that they have laid it down a little too far to the northward, and much too far to the eastward.*

From Batavia to Banca Strait.

110. Ships leaving Batavia and bound to Banca Strait, ought to steer betwixt Rynland Shoal and the eastern reefs, and proceed on a northerly course through the Great or Edam Channel; this course leads between the Hoorn and Haarlem Islands, and Monnikendam sandbank on the port side, and Leiden, Enkhuizen, Alkmaar, and Edam on the starboard side, but avoiding the shoals near Dapoer and Edam.

111. From Edam steer for the South-watcher, avoiding the Nassau Ledge by keeping Alkmaar open to the westward of Edam. From the South-watcher do not steer too much to the eastward of the Thousand Islands, especially in the eastern monsoon, when a ship is liable to be driven in a calm amidst unknown dangers, where there is sometimes a current of 4 miles an hour. The South-watcher may be passed on either side, but off the North-watcher, beware of the Omega, and other shoals more to the eastward. To avoid them with certainty, give the North-watcher to the eastward a berth of 6 miles. A ship may also pass the North-watcher on its western side, but then she must borrow towards it, so as to clear the Two Brothers, the Lynn and the Dolphin Shoals, and to give a sufficient berth to the Brouwer Bank. From the North-watcher shape a course for Lucipará about N. b. W.; but in

North-watcher to Lucipará.

* According to Horsburgh, the Duke of Dorset, 1715, sent her boat to sound near a rock about 2 leagues N.E. of the South-watcher; it was found to be a little above water, not half a ship's length in extent, and having close to it 13 fathoms.

the western monsoon, with S.W. and westerly winds, it will be prudent to steer more to the westward, borrowing toward the banks which project from the Sumatra coast as far as 11 to 9 fathoms, but they should not be approached nearer than 9 fathoms, particularly in the night.

From Sunda Strait to the Two Brothers.

112. Ships that have passed through Sunda Strait, and are bound to Banca Strait, should steer a direct course N. b. E. for the Two Brothers, after having passed also the Zutphen Islands and North Island, according to the directions in Art. 56—63. It is prudent to keep within a moderate distance of the Sumatra coast, in order to avoid the shoals in the offing; 11 or 12 fathoms is a good depth. With a working wind, a good mark in daylight is, when standing in-shore, to tack when North Island is just in one with the highest Zutphen Island; the depth will then be generally 7 or 8 fathoms, and a large ship should not risk a less depth when working between North Island and the Two Brothers.

Two Brothers.

113. The Two Brothers are situated in 5° 9½′ S. and 106° 9½′ E., about N.N.E. ½ E., 12 leagues distant from North Island, and about W. ¼ N., 8 leagues from the North-watcher. These islands, as well as North Island, and the whole Sumatra coast as far as Banca Strait, were placed in former charts some minutes too far west. They are small islands, very near each other, covered with trees, and visible, in a clear day, 5 or 6 leagues. In the direction of N. b. E. and S. b. W. they are in one with each other, and about 6 leagues distant from the Sumatra coast. From each end of these islands a reef projects to a small distance; they are also connected by a reef, which falls dry at low water sometimes. These islands may be passed with equal safety on either side.

Shahbunder Shoal.

114. The Shahbunder Shoal, named after a Dutch ship of that name which narrowly escaped destruction on it, lies about 7 miles west from the Two Brothers; it is an extensive bank formed of various patches, and seems to be the outer extremity of the shoal bank that projects from this part of Sumatra.* As the depths decrease gradually towards this shoal, the lead, if

* The Sandwich, an English ship, in 1749, grounded in 17 feet on the following bearings; the northernmost land of Sumatra that was visible, probably Scopong Point, N. b. W., and the northernmost of the Two Brothers, E.N.E.

attended to, will indicate its proximity. A ship passing between it and the Brothers should not keep farther than 3 or 4 miles from the latter, nor run into less than 9 fathoms toward the coast, which in daylight may be kept in sight if the weather be clear. The only high land near the sea, on this part of Sumatra, is a sloping hill with a knob on its summit, in latitude 5° 20′ S., and called Mount Imbong, or Knob Hill. In some directions, however, this mount is not distinctly visible. *To pass between the Brothers and the main.*

115. The Jason Rock, upon which a ship of this name struck, in 1742, according to Horsburgh, is said to lie 6 miles W.N.W. from the westernmost of the Thousand Islands, and 6 leagues S.W. from the North-watcher; but the boat of the Warren Hastings could not find it on these bearings. In some old charts this rock is not laid down, but a shoal is marked about 2 leagues S.W. from the North-watcher. In our chart it is placed according to the first-mentioned bearings, and, therefore, in 5° 26½′ S., and 106° 21½′ E., but its true position is unknown. *Jason Rock.*

116. The Dolphin Rock, where a vessel of this name struck, is said to be nearly even with the surface, and to lie about 2 leagues S.S.E. from the south end of the Two Brothers, but neither has the true place of this shoal been correctly determined. *Dolphin Rock.*

117. Lynn Reef is about a cable's length in extent, with only 2 feet water on its coral rocks, but with 9 to 14 fathoms all around it. When the Lynn was aground there in 1748, the Two Brothers bore W.N.W. ¼ W. to N.W. b. W. ½ W., distant about 3 leagues. Another ship, the General Hewitt, struck on this reef in 1820; the North Brother bearing W.N.W. ¼ W., South Brother W. b. N. northerly, and the North-watcher E. ½ S. When she first struck, 2 feet was the least water on it, but a considerable part of it dried at low water; it was found to be nearly a cable's length in extent, composed of hard clay and broken coral, with some small rocks on the northern extremity; the soundings close to and all round being from 10 to 15 fathoms. Another ship saw this bank, and although there was a considerable sea at the time, yet the breakers were not high; and it is very probable that with smooth water there would be no breakers at all on it. *Lynn Shoal.*

Brouwer Bank.

118. The Brouwer Bank, in 5° 4′ S., is composed of two coral reefs, separated about a quarter of a mile from each other, on the bearing of N. b. E. $\frac{1}{2}$ E., and with a dry patch of sand and coral upon each. They are together a mile in extent, with 5 to 15 fathoms depth between them. The ground is hard to the north and south of the shoal, and on the east and west side soft, and at a short distance regular depths of 14 and 15 fathoms. According to Horsburgh, the middle of these shoals bears N.E. b. E. $\frac{3}{4}$ E., from the middle of the Brothers. From the North-watcher, the north part of this bank bears W.W. $\frac{3}{4}$ W., and the southern dry patch N.W. b. W. H.N.M. Steamer Phœnix, under command of Lieut. T. W. Stoll, which anchored, in 1841, close to it, found the bearing of the North-watcher to be S.E. b. E., and that of the Brothers, S.W. b. W. $\frac{3}{4}$ W., which position agrees very well with the first one in Horsburgh. The distance to the North-watcher is about 5 leagues, and to the Brothers about 4 leagues.

CHAPTER V.

BATAVIA TO SOURABAYA.

North Coast of Java.

119. THE North coast of Java is in general flat, covered with large trees to the beach, and a little way up the country there are several high peaks, which may serve as sea-guides. Some of these are on mountains 10,000 and 11,000 feet high, and their positions accurately laid down in the accompanying charts. It happens often that they, especially in the eastern monsoon, are concealed by clouds or by the hazy state of the atmosphere, but in the western monsoon the highest of them may be seen more than 26 leagues.* The soundings along the coast are regular, so that in most places the land may be approached to 8, 7, 6, and 5 fathoms, mud; but, in some places, extensive shoals project from the shore; and there are a few dangerous rocks and shoals in the offing.

Monsoons.

120. The eastern monsoon prevails along this coast while the sun is to the northward of the equator, and the western monsoon when the declination is south; their general tendency being towards that parallel where the sun is in the zenith. The former is in its greatest strength in the months of June, July, and August; and the western monsoon in December, January, and February. As in most intertropical countries, land and sea breezes will be found within a certain distance from the shore, and may be very advantageously employed in an adverse monsoon. These land and sea breezes, however, are not regular, as in the strength of the western monsoon the wind does not at all deviate from its common direction, and in the middle of the eastern monsoon seldom more than one or two points.

Land and Sea breezes.

121. Ships passing between Batavia and Sourabaya back must steer different courses in different seasons, in order to make a speedy passage; and although the rules prescribed

* In October 1842, Lieut. Melvill saw the Pangerango, or Blue Mountains, at the distance of 37 leagues.

here are not submitted as fixed laws, yet they should be followed as nearly as possible, according to circumstances.

Batavia to Sourabaya, in W. monsoon.

122. Vessels going in the western monsoon from Batavia to Sourabaya ought to run out from the Rynland Shoal between north and north-east till Edam bears N.W. Then steer N.E. b. E. 16 miles, and E.N.E. 20 miles, till in about 5° 42′ S., and 107° 28′ E., when they will be clear of the reefs of Sedarie; then steer east 36, and S.E. or S.E. b. E. 28 miles, passing betwixt the rock of Pamanockan and Boompjes Islands, after which a direct course may be steered for the Point of Indramayoe. When they have verified their reckoning by one of these points the course will be east for 49 leagues, along the south side of Carimon Java Islands, till Mandeliké Island bears south; from thence steer S.E. b. E. and E.S.E. to make Ouwer Point (in about longitude 112° E.), care being requisite not to bring Mandeliké to the northward of west till clear of Taio Bank. From Ouwer Point the course is E. and E.S.E. along the shore, having a good mark in the Doodkists (coffins) to make Panka Point. In this monsoon it is of the highest importance, when past Mandeliké, not to keep too much in the offing, as the easterly currents will carry a ship speedily past Sourabaya Strait, in which case the hills upon the island Madura, called the False Doodkists, will be mistaken for those which lie near Panka Point. In such circumstances, a ship would have the greatest trouble to beat up against the westerly winds and contrary currents in order to fetch Sourabaya Strait, a case which has often happened.

Sourabaya to Batavia, in W. monsoon.

123. Ships bound from Sourabaya to Batavia in the western monsoon have a difficult task to perform, when the wind blows with violence, and for a ship that sails indifferently it will be impossible.

It is always a safe rule to take advantage of every little veering of the wind which will give the most westing. Should it draw to the southward of west, work up with short tacks under the Java shore, to avoid the disadvantage of a high sea and easterly currents. If it comes to a gale with a high head sea, it would be advisable to bear up for one of the harbours, and wait a change in the weather, as in general such weather does not last long. Most of the roads along the north coast of Java are unsafe in this monsoon, such as those of Japara,

Samarang, Pekalongang, Indramayoe, Tjassem, and Pamanoekan, being exposed to much sea, and some are difficult to enter. Cheribon Road affords good shelter from westerly winds; but in most instances it will be better to return and anchor behind Panka Point,* for, if the wind comes to N.W. or N.N.W., a vessel might be much hampered by the Java shore, causing great trouble to get off, especially if in the Bay of Samarang.

Sourabaya to Batavia, in E. monsoon.

124. Ships bound from Sourabaya to Batavia in the eastern monsoon should steer from Panka Point W.N.W. or W. b. N. till past Mandeliké Island, and then about west from Indramayoe Point, which should be seen. From thence a westerly course for 8 or 9 leagues will carry them in sight of Pamanoekan Point, but not too far in the offing for fear of Pamanoekan Rock. When certain of having passed that rock, steer about N.N.W. till at least 8 miles to the northward of Sedarie Point, to avoid the Sedarie Reefs, and then try to get sight of the land near Krawang Point with a S.W. or W.S.W. course, after which make Edam Island, and passing between it and Krawang Point with a S.W. course, run into Batavia Road. When the ship has arrived off Sedarie Point, if becalmed there, seeing the land, mind the westerly current, which might carry her much more to the westward than the reckoning would indicate, and might entangle her among the Nassau ledges and other dangers thereabout. H.N.M.S. Schrikverwekker, coming from the eastward to Batavia, was carried so far by the current in the night of the 17th of May, 1806, and was wrecked upon one of the reefs near Agenieten Islands. And the Admiral Zoutman, Capt. Heykop, which ship struck in March 1839, upon a coral rock, bearing (by account) 16½ miles N.N.W. ¼ W. from Krawang Point, and carrying 18 feet water. This rock seems to have been the Nassau Ledge. The Captain remarks that long experience had taught him that if a ship be more than 7 or 8 leagues distant from this part of the coast, it is prudent to anchor, even in 25 fathoms, if the weather is not too threatening, as the lead is no proper guide in such a situation.

* In the western monsoon, tolerably good shelter will also be found near or in Joana Road, or behind Cape Boegel and the Taio Bank.

Batavia to Sourabaya in E. monsoon.

125. A vessel from Batavia to Sourabaya in the eastern monsoon ought to take every possible advantage of the land and sea breezes, and therefore should not stand too far into the offing. If she leaves Batavia Road in the evening, or in the night, and arrives abreast of Edam on its eastern side, a north-easterly course will carry her to about latitude 5° 42′, where she may expect the sea breeze. From thence she will get sight of the Points of Pamanoekan and Indramayoe with S.S.E., S.E., or E.S.E. courses, taking care to give a good berth either north or south to Pamanoekan Rock. Then let her try to get so much easting with the land wind that the next tack in-shore will allow her to stand along Cheribon Reef. When this succeeds, and on this tack Brebes Point, or Tegal, is made, the coast should not be approached, from thence to Samarang, nearer than 10 miles, in order to avoid the Pemoelang and Korowelan Rocks, nor should she stand too far off on account of the Bappang Reef. If not bound to Samarang, when making long tacks off and the short boards in-shore, she will get sight of the Japara Mounts, and may try to gain so much easting as to weather with the sea breeze Mandeliké and Taio Bank. Take care, however, not to borrow too much on this bank, and therefore Mandeliké should not be brought to bear to the northward of west before Cape Boegel is distant 8 miles. From thence beat up with short tacks in the offing and long ones in-shore, along the coast toward Panka Point, in order to get sight of the Doodkist or Coffin Hills. In the night the small Mount Koekoesan, near the Coffins, is a good mark for bearing away towards Panka Point.

Krawang Point.

126. Krawang Point, in 5° 57′ S., and 107° 5′ E., or 13′ E. from Batavia, forms the N.E. boundary of Batavia Bay. When bound to the eastward, pass this point at a distance of 4 miles in 15 fathoms ; for though it may be approached to 2 miles in 10 fathoms, it is better kept at a greater distance, as to the eastward of this point the bank trends to the northward till it reaches an offing of nearly 3 miles. From Krawang Point steer E. b. N. or E.N.E. to avoid the Reefs of Sedarie. The coast betwixt Krawang and Sedarie Points stretches about east and E. b. S., forming two bights towards Sedarie Point, which is round, and fronting the sea. Its low and

Sedarie Reefs.

woody north-easternmost part is in 5° 59½′ S., and 107° 25½′ E., and about 4 miles to the eastward of the mouth of Sedarie River. Sedarie Reefs consist of some dry patches or shoals detached from the shore, with narrow channels between them. Upon the two northernmost of these patches 3½ and 4¼ fathoms is the shoalest water, and altogether they extend 2 miles N.W. and S.E., and 1 mile across; and are composed of black sand with shells. The northernmost bank lies in 5° 54′ S., and 107° 28′ E., and bears N.E. from Sedarie Point, 6 miles distant. The depths outside increase rapidly from 5 to 7 fathoms, and at the distance of 2 miles to the northward, to 10 fathoms, inside of which it is not advisable to pass; and there the low land of the point is just discernible. Upon the southernmost of these shoals, which consists of three small patches of sand with shells, near each other, the least water is 2½ fathoms. Between the north and south patches there is a channel of 1 mile in breadth, lying N.W. and S.E., with 8 to 10 fathoms water, but decreasing to the eastward to 6 fathoms. Betwixt the south patch and the main, a channel 1 mile wide and 4 fathoms deep, over mud, stretches 2 miles along the coast. Small vessels not drawing more than 12 feet may proceed through this channel, taking care when rounding the point not to approach the shore within 2 miles, and not to stand farther out than 3; but it is still wiser to pass to the northward of all these dangers.*

127. Near the northernmost of these shoals, Lieut. Escher took the following bearings:—Mount Salak S.W. ¼ S., the Pangerango S.S.W. ½ W., the Panimbang S. b. W. ½ W., the highest top of the Craggy Mountains S. ½ W., the highest top of Tankobang Mountains S. b. E. ¾ E.,† the Tampomaas S.E. b. S., and Cheribon Peak (just visible) S.E. From the outer edge of the Sedarie Reef the course is between S.E. and E.S.E. towards Pamanoekan Point, which lies in 6° 12′ S., and *Pamanoekan Point.*

* The place where, in June, 1840, the ship Pekalongang was said to be lost near Pakies, the middle of which bore S. ¾ E., and the outermost point of Krawang W. ¾ S., in 3 fathoms, is not a shoal separated from the land, but a spit projecting from the shore. But, according to the declaration of the crew, the ship struck off Pamanoekan, and was driven afterwards to that place.

† Dr. F. W. Junghuhn found the height of Mount Tankobang, by barometer, to be 6,427 feet above the surface of the sea.

longitude 107° 49½′ E., or 57′ 30″ from Batavia. The shore may be approached to within 8 fathoms, and from 10 to 14 fathoms is a proper track in the night, in order to pass within the Pamanoekan Rock, on which the Waerden Castle was lost.* This rocky shoal, as surveyed in 1802 by Lieut. N. Doekes, bears N.E. b. N., a little easterly from Pamanoekan Point about 6 leagues; the adjacent depth being 17 to 19 fathoms. According to his survey the rock is 109 yards in extent, with 2½ fathoms water upon it, and Pamanoekan Point just visible, appearing as an island.

Pamanoekan Rock.

The existence of this rock, or at least its true position in the charts, being still doubted, Lieuts. E. H. Boom and T. Groll were sent out to search for it in 1841, with H.N.M. schooner Krokodil and the steamer Etna. Accordingly they steered for it in the direction of N.E. b. N. from the point, in soundings of 19 and 16 fathoms, but without success. Mr. F. Wilson, manager of the Crown lands at Pamanoekan and Tjassem, likewise searched for it, but in vain. Some old native fishermen, however, assert that formerly there was a shoal in the position indicated, which sometimes showed itself above water, but all of them agree that it has not been seen for many years. Messrs. Sutherland and Wright also, in 1829, as well as Mr. Leisk, in 1837, examined the spot, and with the same negative result.

According to the report of the captain of a Portuguese vessel, the rock of Pamanoekan is 220 yards in extent, and bears N. ⅛ W. from Tampomaas Mount; Capt. T. F. D. Bouricius, D.R.N., in 1841, in H.N.M. brig Meermin, saw riplings, which were probably this rock; and Horsburgh states that the Princess Charlotte struck on a rock thereabouts in 2½ fathoms water. More recently, the Dutch ship Elmina saw this rock, and places it N.E. b. N. 14 miles from the point; and, in 1848, the Dutch ship Celebes struck on it, Tampomaas Mount bearing S. ½ E. All these different statements show that the existence of this danger is unquestionable; and that it lies nearly on the

* H.N.M. steamer Hecla, under the command of Lieut., now Captain, Coertzen, found in 1843, at 6 or 8 miles east, or E. ½ N. from Pamanoekan Point, and 3 or 4 miles off shore, the water shoaling to 3 fathoms and less; it is not, therefore, advisable to steer close in shore thereabouts.

bearing of N.E. b. N. from Pamanoekan Point, and at the distance of 13 or 14 miles.

128. But there are other dangers in this neighbourhood, which, like the above rock, require further examination. In 1835 the Dutch ship Vriendschap, of 17 feet draught, touched on a shoal about 8 miles to the eastward of the Pamanoekan Rock, or in 6° 1′ S., and 108° 5′ 30″ E. Again, in 1845, the Susanna Christina had the following soundings, 10, 9, 7, 6½, 5½, 10, and 11 fathoms, with discoloured water, which appeared to take a north and south direction, and to extend about 2½ cables' lengths in the latitude of 5° 48′ S., and in 107° 44′ E.

129. Near Pamanoekan Point, about 2 miles distant W. ½ S. from it and N.N.E. from the mouth of Tjassem River, good anchorage in the E. monsoon may be taken in 4 fathoms water. H.N.M. steamer Etna anchored here in 3 fathoms soft mud, the extremity of the point bearing E. ¾ N., Pamanoekan River E. ½ N., Kamala River S.E. ½ S., Tjassem River S.W. b. S., and the southernmost of the Sadoelang Islands W. ¾ N. From this anchorage the course of N.E. b. E. leads clear of a reef which projects nearly to the distance of a mile from the point. Between the Sadoelang Islands, which lie from 8 to 16 miles to the westward of Pamanoekan Point, there are some shoals, which it is advisable not to approach. From Sedarie to Indramayoe Point the coast is low, with some highland in the interior; it may be approached safely to 8 fathoms, but not nearer, for at the distance of 6 miles E. from Pamanoekan Point, and 3 or 4 miles off shore, the water shoals in some places to 3 fathoms and less. *Pamanoekan anchorage.*

130. The point of Indramayoe, in 6° 12′ S., and 108° 21½′ E., or 1° 29½′ W. from Batavia, is of moderate height and woody, and at some distance has the appearance of an island; at its western side there is a good anchorage in 4 or 5 fathoms, but to the northward it should not be approached within 7 fathoms, as the reef projects there nearly a mile. *Indramayoe Point.*

131. Rackit Island, in 5° 54′ S., and 108° 23½′ E., by chronometer, is full 6 leagues N. ½ E. from Indramayoe Point. According to Lieut. B. H. Staring, D.R.N., who surveyed it in 1840, Rackit Island is about a mile E. and W. in extent and lies in the track of 25 fathoms. About N.N.E. from it lies *Rackit Island.*

Middle Patch. the Middle Patch, which consists in a collection of rocks, close to each other, and partly visible above water; and still farther N.N.E. the North Patch or outer Patch, in 5° 46½′ S., and 108° 27¼′ E., the passages between these shoals and the Island are each of them 3 miles wide, with 25, 26, and 27 fathoms depth, and are both safe. Vessels, however, should keep in the mid-channels, as the reefs project a little distance under
Outer Patch. water. Close to the northward of the Outer Patch there are 27 fathoms, and 4 miles N.N.E. of it 30 fathoms blue mud. When working through the channel, between Rackit Island and Indramayoe Point, in the night, do not approach the Island nearer than 20 fathoms, nor the point nearer than 10 fathoms.

Cape Tanna. 132. From Indramayoe Point the coast runs S.E. b. E. 7 leagues toward Cape Tanna, in 6° 30′ S., and thence S. b. E.
Cheribon. 14 miles toward Cheribon, the flagstaff of which on the eastern side of the river lies in 6° 45′ S., and 108° 38′ E., or 1° 46′ E. from Batavia. Ships coming from the westward, and bound to this road, should give a good berth from Cape Tanna to
Cheribon Reef. Cheribon Reef, which projects, and for this purpose the point of Indramayoe should not be brought to bear to the northward of N.N.W. until past the danger. This reef was surveyed, in 1802, by Captain Busscher, D.R.N., and, in 1841, by Lieut. Groll. Both the surveys show that the reef projects nearly 4 leagues to the eastward, with 3½ fathoms on its extrême end, and 2½ and 2 fathoms farther in; in some places it consists of hard sand, in others of softer ground, and part of it is sometimes covered with breakers. The south prong of the reef and Cheribon Peak, and the flagstaff, are in one, on the bearing of S.W.; the proper mark, therefore, to avoid that S. prong is to bring the mount well to the westward of S.W., and to round the reef
Cheribon Road. in 6 or 7 fathoms. Large ships find a good anchorage at 2 miles N.E. or E.N.E. from the fort, with a small but conspicuous Djatty bush, about W.N.W. in 3½ to 4½ fathoms, soft mud; and small vessels more in shore half a mile from it, in 3 to 2¼ fathoms. H.N.M. iron steamer Etna lay at anchor there in 2¼ fathoms clay bottom, the flagstaff bearing S.W., the small bush N.W. ½ N., and the point near the River Pondok N. b. W. ½ W. In the western monsoon this road affords a good shelter from the high sea.

133. Cheribon Peak,* being very conspicuous, is a good mark for ships sailing along this coast; it stands in 6° 54½′ S., and 108° 28½′ E. *Cheribon Peak.*

134. Between Cheribon and Tegal the coast is low, but inland the country is mountainous, and the Peak of Tegal is the highest point of the whole island; it is in 7° 13½′ S., and 109° 17′ E. A little more to the eastward, but nearer to the sea, there is another conspicuous mountain called Gadjah, or the Elephant. *Peak of Tegal.*

135. The flagstaff of the fort at Tegal lies in 6° 44′ S., and 109° 12½′ E., or 2° 20′ E. from Batavia, and bears N. b. W. from Mount Tegal. The anchorage is in 4 or 5 fathoms N. b. W. from the fort, 1 or 1½ miles off-shore. This road was surveyed in 1802 by Captain J. O. Vaillant, D.R.N., who places the Tegal Rock N.E. ¾ E. 4½ miles from Tegal, and about 3 miles from the nearest point of the shore, in the stream of 9 fathoms. This rock is partly even with the water's edge, and extends east and west 710 yards, and north and south 330 yards. From Tegal Peak this rock bears about N. ⅛ W., and the soundings at half a cable's length round it are 9 fathoms; shoaling regularly towards the shore, in 8 and 7, to the mid-channel in 6 fathoms. Outside, the depths increase rapidly to 9, 10, and 11 fathoms, nearer than which it should not be approached; and when proceeding through the channel between the rock and the shore 6 fathoms is a good depth. *Tegal Fort.* *Anchorage.* *Tegal Rock.*

136. From Tegal to Samarang the coast runs about east with some small bights. Cape Pamalang should not be approached nearer than in 15 fathoms, to avoid the shoals of Soegalie and Pemoelang which lie about 4 miles N.W. and N.N.W. from that point. The shoalest spots upon these shoals are 16 and 27 feet; and they bear about 16 miles E.N.E. ½ E. from Tegal, and N.N.E. from Mount Gadjah. There is a very good anchorage near Cape Pamalang in 6 or 7 fathoms, as well as about 2 leagues more to the eastward, opposite the river Oeloedjamie, in 4 and 5 fathoms water. Cape Pamalang is in longitude 109° 32′ E. *Soegalie and Pemoelang Shoals.* *Cape Pamalang.*

137. Pekalongan stands upon a river, of which the mouth lies in 6° 54′ S., and 109° 40′ E.; and the town being a little *Pekalongan.*

* Dr. Junghuhn found in 1840, by barometer, that Cheribon Peak was elevated 10,323 feet above the surface of the sea, and Tegal Peak 11,329 feet.

inland, and not visible from seaward through the trees, a white plastered pyramid was erected in 1836, a little to the westward of the entrance of the river; on its summit there is a flagstaff, standing about 90 feet above the surface of the ground. When coming from the eastward, if a vessel should pass Cape Goenong at the distance of 2 miles, in 5 or 6 fathoms depth, the pyramid will be seen bearing W. b. S.; from thence steer W.N.W. $\frac{1}{2}$W. in $5\frac{1}{2}$ fathoms, toward the road of Pekalongan, where she may anchor in $4\frac{3}{4}$ or $3\frac{1}{2}$ fathoms, soft ground, at $1\frac{1}{2}$ or $1\frac{1}{4}$ miles from the entrance of the river. Coming from the westward, Cape Pamalang should not be approached too near, to avoid the shoals of Soegalie and Pemoelang; but once past those rocks, Oeloedjami Point may be approached to $4\frac{1}{2}$ fathoms, at the distance of 3 or 2 miles, where the pyramid will be discerned, bearing E.S.E. about 8 miles, amongst some high trees on the beach which served formerly to guide a ship to Pekalongan Road. When not touching at this place, then 14 to 20 fathoms is a good depth in the night to avoid the Bappang or Coreas Reef, also called Karang, which was examined, in 1847, by Captain Theedens, who anchored near it in 8 fathoms, and found its length and breadth to be about half a mile. Its general depth was $3\frac{1}{2}$ to 4 fathoms, but in one spot there was a single rock carrying only 14 feet; close round the reef there were $4\frac{1}{2}$ fathoms, and it lay in the stream of 23 fathoms, in the latitude of 6° 34′ S., and longitude 109° 50′ E., about 20 miles from the shore, and about 18 miles east of Pamalang Point.* Another shoal, called Korowelan, with $3\frac{3}{4}$ fathoms depth, is situated more to the eastward about 6 miles off shore, abreast of Kendal, in latitude 6° 47$\frac{1}{2}$′ S., and longitude 110° 11′ E.; between this shoal and the shore is a channel with 10 to 5 fathoms depth.

Cape Goenong.

Bappang, or Coreas Reef.

Korowelan Shoal.

138. Between Tegal and Samarang the land is high in the interior; the most conspicuous mountains toward the latter place are the Sindoro and Soembing, or the Gebroeders

Gebroeders or Brothers Mountains.

* Capt. Bouricius, commanding H.N.M. brig Meermin, intended to pass, in 1841, at a distance of 6 miles along this bank, when at 11 o'clock A.M. ground was seen under the bottom, but in two or three minutes she was in deep water again. The position of the brig, reduced from noon of that day, gave the latitude 6° 32$\frac{1}{2}$′ S. and the chronometric longitude 109° 43$\frac{1}{2}$′ E.; according to which the Coreas would be 5 miles more to the W. b. N.

(Brothers), both remarkable peaks, the easternmost being most remote from the shore. They bear S.W. b. W., and S.W. $\frac{1}{4}$ S. from the entrance of Samarang river. The easternmost and highest peak of the Prahoe Mountains bears W.S.W. nearly from the mouth of that river, and is in 109° 58′ E. To the eastward of these stand the Samarang Mountains, called Oenaran and Merbaboe, bearing S. b. W. $\frac{3}{4}$ W., and S. $\frac{1}{4}$ W., from the mouth of Samarang River.*

Prahoe Mountains.

Oenaran and Merbaboe Mountains.

139. The Bay of Samarang, bounded to the eastward by the high land of Iapara, lies S. from the islands of Crimon Java, usually called in the charts Carimon Java. This bay affords good anchorage in the eastern monsoon in 5 or 6 fathoms, mud, at about 3 or 4 miles from the beach, the flagstaff of Samarang bearing S. or S.S.E., the westernmost visible land about W., and the high land of Iapara N.E. b. E. Small vessels may anchor in 4 fathoms, 2 or 1$\frac{1}{2}$ miles distant from the shore. The road being open to W. and N.W. winds, ships are exposed in the western monsoon to a high sea, for which reason this bay is not to be recommended in that season, particularly if compelled to make a long stay. The flagstaff stands in 6° 57′ 20″ S., and 110° 28′ 30″ E., or 3° 36′ 30″ E. from Batavia by chronometer; and the mouth of the river, according to Lieut. Boom, in 6° 57′ 48″ S., and 110° 27′ 45″ E.

Samarang Bay.

140. Iapara Road is situated in 6° 32$\frac{1}{2}$′ S., and 110° 39$\frac{1}{2}$′ E., and is very safe in the eastern monsoon. The anchorage is inside of the islands Kelok and Panjang, in 4 to 6 fathoms depth.† When coming from the westward the high land of Iapara appears like an island, the coast near Samarang being low, and forming a deep curve. From Samarang Road to Iapara Point the course is about N.N.E.; and between them lies Visscher Island, in about 6° 36′ S.

Iapara Road.

Anchorage.

141. The Crimon Java Islands are very numerous, covering a space of 12 or 13 leagues east and west, and 5 leagues north

Crimon Java Islands.

* Dr. Junghuhn measured the heights of the above-mentioned mountains by barometer, and found, viz.:—Sindoro, 10,318 feet; Soembing, 11,030 feet; Prahoe, 8,389 feet; Oenaran, 5,147 feet; Merbaboe, 10,220 feet; Merapie, 9,209 feet.

† The reef near Iapara probably projects farther from the shore than is indicated by the chart; this part of it having been drawn in 1802, since which the shoal is said to have increased. The anchorage is close to the islands.

and south. These islands have Dutch as well as native names, which shall be here stated to avoid confusion.

NATIVE.	DUTCH.
Poulo Crimon Java	Crimon Island
„ Komodian	Dibbets
„ Ketzil	Meenwen
„ Tenga	Toren
„ Linto	Kreeften
„ Tjendikian	Tortelduiven
„ Goendoel	Schilpadden
„ Seronie	Welgemoeds
„ Genting	Floryns
„ Sambangan	Bodjong
„ Meniangan-besar	Groot Hartenbeesten
„ Meniangan-ketjil	Klein Hartenbeesten
„ Boerong	Ossenbruggen
„ Glean	Vreede
„ Tjamara-ketjil	Strikburg
„ Tjamara-besar	Anna
„ Benkowan	Frederiksburg
„ Minjawan	Kools
„ Krakab-ketjil	Wageli
„ Krakab-besar	Vogelen
„ Niamok	Beeldsnyders
„ Katang	Wilkens
„ Kombar	Jansjes
„ Parang	Watchers
„ Kombang	Schilderhuisjes.

142. The largest and highest of these islands are Crimon, Komodian, and Parang, which are discernible at a great distance. There is a Dutch Settlement at Crimon, which is sometimes visited by ships. The general anchorage is about 3 miles west from Crimon, and about midway between the islands Meniangan at the east side, and Glean and Boerong at the west side, in 20 to 30 fathoms water. H.N.M. frigate Vreede, under command of Capt. T. H. Dibbets, who surveyed these islands in 1803, anchored here in 22 fathoms, the N.W. point of Crimon bearing N.N.E. $\frac{3}{4}$ E. the flagstaff east, the north point of Meniangan-ketjil, E. b. S., and the south point of Glean about west. The flagstaff stands in 5° 54′ S. and 110° 31$\frac{1}{2}$′ E. Between the different islands there are deep channels with 19 to 30 fathoms, but they should be cautiously used, for besides the reefs that project from the islands, there are some other dangerous rocks, which were discovered and surveyed, in 1825, by Lieut. I. I. Baedrie, and, in 1826, by Capt. Elgenhuizen, D.C.N.

Anchorage.

The last-mentioned officer enumerates the following dangers :—

Dangers near Crimon Islands.

1st. A coral reef, dry at low water, about a mile east and west in diameter, and at a quarter of a cable's length all round it 10 to 14 fathoms hard bottom. When on the reef, both Krakab islands appear in one, and bear S.S.W. $\frac{3}{4}$ W., the highest land of Crimon Island, E. b. S., and the east point of Parang, N. b. W.

Katang Reef.

2nd. The Katang Reef, consisting of fine white sand, mixed with small stones, and surrounded by large coral rocks. This reef is steep-to at its south side, has 6 to 8 feet upon the highest place, and at three quarters of a cable's length distance all round 10 to 14 and 20 fathoms hard bottom. It stretches east and west about 2 or 3 miles, and north and south about a mile, and although it does not dry at low water, it is easily discerned in clear weather. From this reef Katang Island bears E. b. N., the highest land of Crimon E. $\frac{1}{2}$ S., Krakab-besar E.S.E. $\frac{1}{4}$ E., Krakab-ketjil S.E. b. E. $\frac{1}{2}$ E., and the north point of Parang N.E. $\frac{3}{4}$ E.

Kappal Reef.

3rd. The sandbank and coral rocks, called Kappal, about 2 or 3 miles east and west, and a mile broad. Upon its shoalest part there are 2 and 4 feet water, and a quarter of a cable's length off, 9, 10, and 12 fathoms hard ground. From its west point Krakab-besar bears N. b. E. $\frac{3}{4}$ E., and Krakab-ketjil N. b. E. $\frac{1}{4}$ E. Boerong, E. $\frac{1}{2}$ N., the highest land of Crimon Island, E.N.E. $\frac{3}{4}$ E., Niamok Island, N.N.W., and the west point of Parang Island, N. $\frac{1}{4}$ E.

Bissie Rocks.

4th. The Bissie Rocks, 2 or 3 miles long, N.E. and S.W.; upon some of the rocky heads there are but 2 or 3 feet water, yet between them 2 and $2\frac{1}{2}$ fathoms, and all round at half a cable's length distance, 6 to 14 fathoms hard ground. From these rocks the N.W. point of Parang bears N.E. b. E. $\frac{1}{2}$ E., the highest land of Crimon E. b. S., Kombang E. $\frac{1}{2}$ N., the south point of Niamok S.E. $\frac{1}{2}$ S., and the middle of Kombar Island N.E. $\frac{1}{2}$ E.

Besides these reefs and rocks, a shoal will be found between Kombar and Parang Islands; another 2 miles S.E. of Parang; again, at a mile N.E. of Tjamara-ketjil; and several other small rocks along the east coasts of Komodian and Crimon Islands. A vessel coming from the westward, and intending

to touch at these islands, should make Crimon about E.N.E., and steer right for it, taking care to give Krakab-ketjil a berth of 6 miles to the southward, in order to avoid Kappal Reef; and then to pass between Boerong and Meniangan, steering for the anchorage. Betwixt Crimon and Meniangan there is a channel with sufficient depth for large ships, but it is rendered very narrow by reefs that project from both sides. When passing along the western side of this group of islands, it would be prudent to keep at least 8 miles to the westward, to make sure of clearing Katang and Bissie Reefs.

Tides among the Crimon Islands.

143. In 1839 Mr. Michalofsky observed the tides among those islands, and states, that they are very irregular, but that with rising water (in the eastern monsoon by night, and in the western monsoon by day,) the current runs most to the eastward, and with falling water to the westward. It is but once in the 24 hours high and low water, each tide lasting from 9 to 15 hours. At full and change it is high water in the eastern monsoon at 8 P.M., and in the western monsoon at the same hour A.M.; and there seemed to be a general, although irregular, retrograde motion in the time of high water. The mean rise and fall of the water was 4 feet, and the greatest 6 feet.

Mandeliké Island.

144. The passage between the Crimon Islands and the coast near Iapara is 10 or 11 leagues wide, with depths of 19 to 30 fathoms. Near the Java coast lies the island of Mandeliké in 6° 22′ S. and 110° 53′ E., or 4° 1′ E. from Batavia by chronometer. This island bears north from Mount Moera, about a mile off-shore, and may be approached very near, it being steep-to at all sides.

Mandeliké Pass.

The passage between Mandeliké and the main was visited in 1841 by Lieut. Groll, in H.N.M. steamer Etna, and found to be free from dangers, being a mile wide, and having $3\frac{3}{4}$ and $4\frac{1}{2}$ fathoms water, clay bottom, decreasing toward the Java side to 2 fathoms, for which reason a ship should keep the Mandeliké side. When at anchor at the entrance of the river Marietiang in $2\frac{3}{4}$ fathoms, soft ground, at nearly 2 miles distance, off-shore, the south point of Mandeliké bore W.N.W. $\frac{3}{4}$ W., the north-western or highest peak of Mount Moera W.S.W., and a conspicuous red point E.S.E. $\frac{1}{4}$ E. The mean of 4 meridian altitudes placed Mandeliké in latitude 6° 22′ S.

145. Two miles east of Mandeliké at Cape Boegel, the coast forms a deep curve, from which the bank of Taioe projects 5 or 6 miles off-shore; a large ship should therefore not bring Mandeliké to the north of west until 6 miles past Cape Boegel. According to Lieut. Groll's observations in 1841, this bank consists of the same whitish clay which is found near Mandeliké and in most places along the north coast of Java. This bank stretches along the coast, toward Joana Road, where there are 4 fathoms water. *Cape Boegel.* *Taioe Bank.* *Joana Road.*

146. The Bight of Rembang is bounded to the eastward by the Point of Lierang in 6° 36½′ S., and 111° 28′ E. Close to the beach are the towns of Rembang and Lassem, noted for their timber, and at the west end of the bight the village Joana, a little way up a small river. The south shore of the bight is lined with a great many islets and rocks. The flagstaff of Rembang stands in 6° 40½′ S., and 111° 18′ 40″ E. To steer for the road, and to avoid the rocks, of which some are lying 2½ miles off-shore, bring the flagstaff to bear south, and anchor on that bearing in 4 or 4½ fathoms, about 2 miles from the shore. Small vessels may anchor more in-shore; H.N.M. steamer Etna anchored, in 1841, in 1¾ fathoms water, soft ground, the flagstaff bearing S. ¼ E., Mount Lassem E. ¼ N., and the Point of Pandan W. ½ N. From Lierang Point the coast leads with some small curves about E. b. S. to Sourabaya Strait, and may be approached to 6 and 5½ fathoms, and in some places into 4½ fathoms water. *Lierang Point.* *Rembang.*

147. Panka Point, or rather the flagstaff, is in 6° 56′ 2″ S., and 112° 36′ 44″ E., or 9′ 56″ W. from the western pier-head of Sourabaya; it forms the western side of the Strait which leads to Sourabaya, and is a low and sandy point. A little to the westward of it there are some conspicuous mountains, two of which are called the Coffins, from their shape, and a third is of a square form; and these hills serve exceedingly well to recognize Panka Point, and in the western monsoon it is advisable to get sight of them in time, especially at night, because the current carries a ship speedily to the eastward of the Strait. *Panka Point.*

148. The Strait of Sourabaya was trigonometrically surveyed, in 1843-7, by Lieutenant M. H. Jansen, D.R.N., assisted by five other able officers; at its entrance, between *Sourabaya Strait.*

Panka Point, and Cape Wodon, the N.W. point of Madura, it is 15 miles wide, and that space is nearly all filled up by an extensive flat, called the Zee-bank, but leaving at the western side a very narrow channel for the navigation of large ships.

This Western Channel was always bad, and was daily becoming worse, till at length the current forced its way through the Zee-bank, and formed a new channel, in the direction of N. b. E. and S. b. W., and not only with a greater depth than the old one, but larger and easier to navigate; besides which, there is a prospect of its being, within a few years, still deeper.

Pilots. All vessels, however, require pilots, and should anchor, or heave to, off Panka Point, to wait for them. In the eastern monsoon a vessel may anchor at the entrance of the New Channel, to wait for high water, if necessary, to carry her over the bank, and the more so, because in this monsoon high water takes place in the morning. In the western monsoon, high water occurs at night, or in the evening, and when a high swell makes it unadvisable to anchor outside of the bank, it is better to do so under Panka Point, bringing the flagstaff to bear N.W. 1 or 1½ miles distant, in 3 or 4 fathoms.

Zee-bank. 149. To pass outside of the Zee-bank, keep the Square Mount (being the westernmost of the hills near Panka Point) open to the northward of the Coffins till at the entrance of the Channel, taking care that the two coffins are in one, and appear to be as one long mountain ridge. To the eastward, the N.W. extremity of Madura, Cape Wodon should not be brought to the northward of east, in order to clear the Zee-bank, and the rocks of Iamoeang, which lie a little to the eastward of the channel, and which are covered by the sea at high water.

Tides. 150. Ships are sometimes detained upon the bank or at the entrance of the channel by the singular tides which prevail there, and for which science has not yet been able to account, or the pilots even to reduce to rule. In the chart of the channels leading to Sourabaya, by Lieut. M. H. Jansen, D.R.N., the depths are given at low water, and the following remarks are made on the tides :—

"During the months in which the sun is on or near the equator, *i.e.*, in March, April, September, and October,

there are in this channel, at the full and change, two tides in the 24 hours; but at the quarter moons, as well as during all the other months, there is only one tide, and it makes low water in the night with South declination, and in the day when the sun has North declination.

"The greatest rise and fall of spring tides is 6 feet, and it occurs only in those months when there is but one high water in the 24 hours, and 3 or 4 days after full and change. The least rise and fall is 4 feet, and this takes place at the full and change also, but only in the months when there are the two tides, which may be regarded as a change for the day high water to the night high water, and *vice versâ*. At the quarter moons of these months the water rises about 5 feet, and in every other month $5\frac{1}{2}$ feet, above the depths marked in this chart.*

"In the month of—

		HOURS.		HOURS.
May	it is high water between	$21\frac{1}{2}$	and	$0\frac{1}{2}$
June	„ „	20	„	$0\frac{1}{2}$
July	„ „	19	„	0
August	„ „	16	„	0
November	„ „	10	„	$12\frac{1}{2}$
December	„ „	8	„	12
January	„ „	8	„	12
February	„ „	7	„	12

"At the spring tides, as well as at the quarter moons, it is high water always at $10\frac{1}{2}$h. or $22\frac{1}{2}$ hours.

"During the months when the two tides occur, it is also high water at $10\frac{1}{2}$h. and $22\frac{1}{2}$h. These two tides are, however, different in height; and when the sun's declination is North, the morning tide is the highest; but when it is South, the evening tide. In those the quarters which give but one tide, give the higher water as at full and change."

For more convenience, a stake will be erected at each side of the channel, inside of the bank, indicating how many feet water there is upon the bank.

151. A vessel bound to Sourabaya may steer for the entrance of the new channel across the Zee-bank, as directed in Art. 149. *The Zee-bank Channel.*

* In most of the months there are 15 or 16 feet water upon the bank, but when the sun has no declination, or when it is very small, 14 feet, and 14 feet at full and change.

The land about Grissee slopes gradually up from the eastward to Mount Gierie, but its western side is abrupt. When this steep western face of the mount bears S. b. W. ½ W., the trees of Menarie will be in the same direction, and this is the mark to enter the channel with the courses of S. b. W. ½ W., S. b. W., and south.

When a little way up channel, more trees will be seen on Menarie, and they should be brought, as soon as they are visible, in one with that same steep western side of Mount Grissee; and at length, when the low point of Menarie is entirely seen, keep it just open of the steep, and enter the Strait on that mark. If there be a commanding breeze, she may be kept more towards Piering Point on the Madura side, because the Menarie-bank seems to be augmenting. In hazy weather, especially during the eastern monsoon, the Grissee hills are not always distinctly seen, and therefore a large black buoy has been moored at the western side of the entrance to the channel, outside of the Zee-bank, and the whole channel is lined with beacons; the eastern ones carrying baskets or kranjangs, and those to the westward, nothing. In the eastern monsoon, when high water happens between 8 o'clock A.M. and noon, and the springs at 10 or 11 o'clock, the period when the land-wind ceases and the sea-breeze has not yet set in, the best way is to work up with the land-wind towards the shoalest part of the bank (which is between the 2nd and 3rd beacons from the outside), in order to make use of the high water, when the sea-breeze sets in. The current sets to the northward immediately after high water, and therefore if vessels that are outward bound can get with the land wind to this spot, they will be able in a few tacks, with the sea-breeze, to pass outside the bank.

Shoalest part of the Zee-bank Channel.

Upon the shoalest part of the Zee-bank channel, nearly the same depth will be found,—perhaps near the beacon,—a foot less; and in some places differing half a foot, more or less. On the shallowest, in 1847, there were 10 feet, and with spring tides 16 feet; with common tides it was 15 and 14 feet.

Generally the ground is so soft that a vessel receives no damage by remaining aground there; and there was an instance of a ship, drawing a quarter of a foot more than the depth of the channel, passing over the bank.

In the western monsoon, when it is high water between 8 o'clock P.M., and midnight, the sea-breeze generally prevails; in case of its being somewhat scant when going out, keep close along the western beacons, and then one tack will carry you over the bank.

152. Since Lieut. Jansen's survey was made, and the new channel discovered, the old channel leading round Panka Point becomes daily worse and shallower; and it will therefore, in all probability, be discontinued, and the buoys and beacons removed. Notwithstanding which, it may be prudent to give here briefly the courses and sailing directions through it. At each side of the entrance there is a buoy; that on the Java side is white, and the other on the Zee-bank is red. The beacon near the white buoy stands in 4 fathoms water, with the following bearings: the flag-staff of Panka Point W.N.W., Sidajoe S. b. W. $\frac{1}{2}$ W., and a full mile from Panka Point. The beacon of the Zee-bank, near the red buoy, is in 12 feet water, with Panka flagstaff W. b. N., and Sidajoe S.S.W. $\frac{1}{2}$ W., 1,526 yards due east from the other beacon. *Old Channel.*

Till the pilot gets on board, anchor to wait for him to the north-eastward of Panka Point, or if a little nearer in, do not go more than a mile inside of the buoys in 3 or $3\frac{1}{2}$ fathoms at low water, and 4 or $4\frac{1}{2}$ fathoms at high water. From between the buoys the course is S.S.E. towards the beacon of the Triangle, which beacon is visible from the outer buoys, and near which there is another buoy. The beacon of the Triangle, and the beacon of Sidajoe, a little further in, should be passed at the distance of 2 cables' lengths on their western side. When beating up, the lead will be a sure guide in standing towards the Zee-bank; but on the Java side the beacon must not be brought to the northward of N. b. W. When Sidajoe beacon bears about E., steer more to the eastward by degrees, so as to pass to the eastward also of Kapalla Beacon, at the distance of 2 cables' lengths. The depths decrease gradually from the red buoy of the Zee-bank, towards the buoy of the Triangle, from 5 to 3 fathoms, soft mud at high water. The shoalest place on the bank is beyond the Triangle Beacon, and from Sidajoe Beacon till past Kapalla Beacon, where the channel is but two ships' lengths wide, with only 14 or 15 feet water at spring tides, and at neap tides (as in

March and September) not more than 12 feet. The bottom, however, is so soft that a ship may sail through it, but keep nearer to the Java shore than to the Zee-bank, for you will have great trouble to get afloat again when once you stick in the mud at that side.

When Kapalla Beacon bears E. at 2 cables' lengths distance, steer gradually to S.E., so as to pass the first fishing-stakes on the Java side at 2 cables' lengths to the eastward. From thence steer more easterly, between the two rows of fishing-stakes, where 17 and 18 feet water will be found. When past these fishing-stakes steer E.S.E. towards the beacon of Fort Erfprins, and when near keep the beacon and the buoy of the Fort in one; but never bring the buoy to the southward of the beacon, because the Java-bank is here steep-to, shoaling suddenly from 15 to 2 or 3 feet. The channel is here but a cable's length wide, and if you are too fearful of the Java-bank, you will be in danger of the Zee-bank; and the more so because the stream from Solo River runs along the western side of the fort, and then sets over to the Zee-bank. When past the beacon of the fort, steer east for some distance, so as to give a convenient berth to the bank of Menarie, which projects far to the eastward. When the fort bears W., steer according to the following directions for vessels that have entered the Strait by the Zee-bank channel.

Narrows of the Strait.

153. In the narrows of the Strait a mark to avoid the Java side is the steep side of Mount Grissee open of the low point of Menarie; and the mark for the opposite shore, or Madura side, is the small house upon the pier-head of Sembilangan, *not* open of the land. When a vessel has to enter those narrows with a faint breeze, which is often the case, it is advisable to keep on the Menarie side of the bank in 10 fathoms, because the stream setting out of the Solo river has often so much force, particularly a little before low water, that she may be swept by the united efforts of this current and the stream from the old channel, across the Strait, and compelled to anchor. In the westerly monsoon it is also advisable to keep this side, to be certain to fetch above the fishing-stakes, when the wind is scant.

When working through this part of the Strait, stand over toward the Madura side into 7 fathoms, and to the Java side while the steep side of the Grissee mount is open of the Menarie

land. Ships that anchor in the narrows of the Strait should do so under Sawoo Point, in not less than 10 fathoms, as in less water there are rocks under the mud, which would endanger the safety of the ship by the loss of the anchor. The stream is very strong in the narrows, especially to the northward.

154. The fishing-stakes which are found in this Strait, and which are a great obstruction both to its navigation and to the streams of tide, should be kept all to the eastward ; pass them very near when going to the southward, and make the Fourteen-feet Bank. With a working wind the Madura shore may be approached by keeping the lead briskly going till amongst the fishing-stakes ; but on the other side be careful to keep the flagstaff of Fort Erfprins open outside of the trees of Menarie, to avoid the steep Java-bank, which fills up the whole space formed by the curve between Menarie and Grissee. *Fourteen-feet Bank.*

To pass the Fourteen-feet Bank on its eastern side, steer towards the Madura shore (as soon as the western steep side of Mount Grissee bears S.W.) till the small house on the pier-head of Sembilangan disappears behind Boeloe Point, or bring this point to bear North, and steer towards Grissee.

To pass the Fourteen-feet Bank on its western side, bring the small house on Grissee pier-head in one with the corner of Gradangan, and keep this as a leading mark towards Grissee. This bank will always be perceptible by the ripplings, or change of colour of the water. On either side of it there is room for a good sailing ship to work up, and both the bank and the Java and Madura shores may be approached by the lead ; but she must be prepared to tack immediately that the water shoals. When the western point of Mount Grissee bears S.W. b. W. she will be clear of the bank.

155. In the beginning of the eastern monsoon, the northerly sea-breeze with which the Zee-bank has been crossed, will not blow farther than abreast of Sembilangan ; and from thence to Boeloe Point, light baffling winds will be met with ; but when the easterly wind comes out from the bight of Sotja, keep along the fishing-stakes, so as to make a good board to the southward in working towards Sourabaya. In a more advanced stage of the eastern monsoon the sea-breeze will reach farther in, and will also be more northerly ; so much so that generally in the afternoon, vessels run right before the wind into Sourabaya.

In the night the land-wind blows from the west, and in the morning more from the southward. In the western monsoon the land-wind varies between the N.W. and S.W., and towards the end of that monsoon more northerly.

Grissee. 156. Grissee; the pier head is in 7° 10′ 9″ S., and 112° 42′ 17″ E., or 0° 2′ 51″ N., and 0° 4′ 23″ W., from the western pier-head of Sourabaya River, according to the trigonometrical survey of Lieut. M. H. Jansen, in 1843.

Grissee is a noted trading place, being frequently visited by coasting-vessels, which keep up a brisk trade; many of the Indian ships were built there, and it affords good means for repairing them. A pier projects for a considerable distance, and close to this pier is the usual anchorage. From Grissee to Sourabaya the course is S.E. and S.E. b. E., and close to two rocks situated near the Madura shore, called the Buffels Rocks (Buffaloes), the outermost of which is seldom covered by the sea, even at high water. The Madura shore may be approached by the lead till near the Buffels, and those rocks may be approached till within half a mile. The Java-bank, near the Pisang Rocks, is steep-to, the depth increasing towards them to 8 or 9 fathoms, and in some places near their edge to 10 or 11 fathoms; they are always covered, and on their shoalest part there is but a foot water. They nearly touch the steep bank of Java, S.W. b. W. from the Buffels. To keep clear of the Pisangs, do not bring Tanjongan Point to the eastward of north, and tack immediately when the water deepens, as that indicates the proximity of this bank. The current sets direct on those rocks, for which reason it is advisable in calms and light winds to remain near the Madura shore, if possible; but when once past the Pisangs and Buffels, both shores may be approached to 7 fathoms till in Sourabaya roads.

Buffels, or Buffaloes.

Pisangs.

Sourabaya. 157. Sourabaya (or rather the western pier-head at the mouth of the river) is in 7° 13′ S., and 112° 46′ 40″ E., or 5° 54′ 40″ E. of Batavia.* It is one of the chief towns of the isle of Java, with an extensive trade, and produces many supplies for ship-

* The longitudes in this part of the world being all still doubtful, at least within certain limits, geographers will learn with great satisfaction that the Netherlands government has resolved to send out Lieut. De Lange, with a liberal provision of astronomic instruments, in order to determine the absolute positions of some of the principal points in the Indian Archipelago.

ping. There is an excellent naval yard and building slips, with a good hospital. Vessels may at once embark their cargoes without employing proas ; and all sorts of supplies and refreshments are to be had in abundance, especially fresh water, which is filtrated and purified, and carried on board in tanks, in the same manner as at Batavia.

The river is broad and elongated by two piers ; and at high water there is sufficient depth for large proas and square-rigged coasting-vessels, which come in to be careened and repaired. At low water, however, great care is requisite in entering the river, even with boats, there being sometimes only a foot of water upon the bank, and if not kept just in the mid-channel, they may be upset by the current. The road is esteemed to be very healthy, and affords, in all seasons, proper and safe berths for vessels of all sizes.*

The anchorage is about half-a-mile north, or N.N.W. from the entrance of the river, in 9 fathoms water, Grissee bearing about N.W. b. W. In the western monsoon it is better to anchor a little farther out in stiffer holding ground, and also to moor. *Anchorage.*

158. The variation of the compass was ascertained in 1842, by numerous observations, to be 51′ E., and the inclination was, in 1823, 26° 39′. *Variation.*

159. The land is low fronting the strait, but at a considerable distance in the interior there are some high mountains, of which the principal peaks are the Penang, the Ardjoeno, and the Semiroe.†

160. The Solo River, which discharges its waters into the Strait of Sourabaya at a distance of 2 miles W.S.W. from Fort *Solo River.*

* It is said that the graving docks at Sourabaya have been completed on a scale sufficiently capacious to receive large steam vessels. Several vessels belonging to the Netherlands government have been repaired most effectually, and a tariff is about to be published, detailing the rates at which private vessels will be docked and repaired. The construction of these docks will be a great boon to the shipping in these seas, and soon repay the government for the outlay and expenses incurred in their execution.—*Nautical Magazine* 1850, p. 242.

† In 1841, at the anchorage in Sourabaya Road, the bearings and heights of these mountains were determined by Lieuts. Brutel de la Rivière and P. Melvill, of Carnbee, of the Dutch Royal Navy.

Summit of Penang	S. b. W.	½ W.,	26½ miles distance,	5,495 feet high.
,, Ardjoeno	S. b. W.	½ W.,	36½ ,,	11,627 ,,
,, Semiroe	S. b. E.		55½ ,,	12,385 ,,

Erfprins, is one of the largest and deepest rivers of the Isle of Java, and is navigated by large proas far into the interior. In 1841 a part of this river, with the shoals at its entrance, was surveyed by Lieut. Groll, commander H.N.M. iron steamer Etna. He states that the channel, from the southward of Fort Erfprins to the entrance, leads close along the shore of Menarie, and at low water is from 3 to $1\frac{3}{4}$ fathoms in depth. Upon the bank which runs along the north side of this channel there are, at low water, but $5\frac{1}{2}$ or 6 feet, and part of it dries; it consists in some places of sand, and in others of mud, but higher up of clay and mud. The depth is greater inside than outside the entrance, amounting in many places towards the village Boenga to 5 and 7 fathoms. In the eastern monsoon the flood streams up as far as Boenga, and at Bodjo Negors the water is brackish and unpalatable. In the western monsoon there is more water in the river, and, according to the natives, the current in this season always sets down.

The place of the bar outside the entrance is often changed by this strong current, but probably it is only the soft mud that is washed away from off the hard sand.

Both sides of the river being uniformly covered by trees, and presenting everywhere a uniform appearance, no marks for pilotage can be given, and from the frequent changes of the bank, as well as of the depths, it will be advisable for a vessel of some draught to send a boat ahead over the bar to examine the channel, and erect temporary beacons. The direction of the channel, farther up the river, is generally indicated by the fishing-stakes, which are visible at half-tide, and dry at low water. The stream runs nearly in the direction of the greatest depth.

CHAPTER VI.

MADURA ISLAND.

161. The island of Madura is in length, east and west, 29 leagues; by a mean of several observations, Cape Wodon, its N.W. point, is in latitude 6° 55′ 40″ S., and longitude 112° 51′ 45″ E., according to Lieut. M. H. Jansen, in 1846. The east point of the island is in 6° 59′ S., and 114° 11′ 20″ E.* The whole of the north coast of this island may be safely approached, there being at the distance of 1 mile 4 or 5 fathoms depth, at 2 or 3 miles 7 to 9 fathoms, and 6 to 8 miles 15 to 20 fathoms, and at 16 to 20 miles 30, 40, and 45 fathoms, for the most part good holding ground. *Cape Wodon.*

This coast is moderately elevated, and, except for some hills near its western end, of a uniform height; it has generally a fertile appearance, with some rocky sand-patches at its eastern

* The north coast of Madura, and the adjacent channels to the eastward, were surveyed, in 1822, by Lieut. F. A. Fokke, D.C.N. The survey commenced with the island of Gili Lawak or Turtle Island, and the longitude of this point being, by chronometers and lunar distances, in 114° 7′ E., the east point of Madura will be in - - - Long. 114° 11′ 20″ E.
Capt. Ashmore placed it, in 1822, in - - - „ 114° 9′ 20″ E.
The same officer made the west point of Sapoedie 114° 19′ E., which places Madura east point in } „ 114° 10′ 0″ E.
Capt., now Admiral Machielson, D.R.N., in 1834, fixed the north point of Giliang 114° 15′ 56″ which gives - - - - - } „ 114° 13′ 0″ E.
Lieut. Ryser, D.R.N., made, in 1839, the west point of Giliang, 1° 26′ 20″ E., and the west point of Sapoedie 1° 33′ E. of Sourabaya, which place it in } „ 114° 10′ 40″ E.
Capt. Funing, D.R.N., in 1840, at Giliang, makes the interval 3′ 10″, which brings Madura east point in - - - - - - } „ 114° 14′ 30″ E.
And Lieut. Ramhorst, D.R.N., made the S.E. point of Giliang 1° 25′ 40″ E. of Sourabaya, which gives - - - - } „ 114° 9′ 0″ E.
The mean of all these agree very well with Lieut. Fokke. Horsburgh makes the east point of Madura in 113° 35½′ E. and Giliang in 114° 4′ E., both of which are undoubtedly several minutes wrong.

extremity. Horsburgh speaks of a fresh-water place being not far from the east end.

Bawean Island. 162. Bawean or Bavian Island bears due north from Sourabaya Strait, and its centre lies in 5° 49′ S., and 112° 46′ E., or 5° 54′ E. of Batavia, according to the mean of several chronometric observations. It is of considerable extent, being north and south 9½ miles, and east and west 10 miles; towards the centre and west end very high; and having some small islands on both sides. It is dangerous to approach from the S.E. and southward, on account of extensive rocky shoals, which reach 6 and 8 miles off, and near which there are 25 and 30 fathoms water. Horsburgh says, in his East India Directory, that there is a good anchorage at the S.E. side of the N.E. point of this island, where the Royal George, in 1766, anchored in 10 fathoms mud, with a village bearing W. b. S. 1 or 1½ miles, and the southern extremity S ½ E.; the north point of the bay about a mile off, N.N.W. ½ W., three islets from S.E. ¾ S. to S.E. ½ S., at half a mile distance from the nearest shore, and a little more than a cable's length from the mud-bank in the bay. The ship procured here good water and fresh provisions. Prudence is requisite, however, in touching at this place, on account of a reef which projects 2 cables' lengths from the N.E. point, with 13 fathoms depth close to it, for which reason it is advisable to keep a boat ahead, sounding. The principal place in this island is Sanca Poera, on the shore of a bay, in its southern coast. There is good anchorage in this bay, in 7 to 10 fathoms water, between the reefs, the western extremity of the Bay, Alang Point, bearing from west to W.S.W. There are several reefs in this bay, which stretch across from both sides, and therefore a stranger should not bring Alang Point to the southward of W. ½ S. H.N.M. steamer Bromo touched there in 1844, and her commander, Lieut. Broecke, reports that Alang Point is high and conspicuous, the eastern Point of Leyer equally distinct, and Noko Island peak-shaped, and in some positions appearing to be part of the main island.

Sanca Poera.

Alang Ledges. 163. W.S.W. ½ W., 3 or 4 miles from Alang Point, Lieut. Fokke had discovered a ledge of rocks, carrying from 5 to 9 fathoms, but suddenly rising from the depth of 30 fathoms; and the Bromo found another at the same distance from that point, but bearing from S. b. W. ½ W. to S. b. E. ¾ E., with 7 to 9 fathoms.

Just before Alang Point bore N.E. the flagstaff of Sanca Poera was seen outside of it. She afterwards ran past Alang Point, at the distance of 2 miles, steering E.N.E., and more northerly into the bay, with soundings of 20 to 14 fathoms, where she anchored, the flagstaff on the fort bearing N.N.E, Alang Point, W. $\frac{1}{2}$ S., and Leyer Point east. The bay has been recently surveyed by the officers of H.N.M. frigate Ceres.

164. The Hastings Rock, upon which the British ship the Marquis of Hastings struck, May 27, 1826, is described as follows by Captain W. Ottler. It lies in 6° 7′ S. and 112° 39′ E., with the body of the island of Bavian bearing N.E. b. N.* The rock was not visible, and probably but very small, as the ship struck but once, and this was even hardly felt; but it produced a leak, and she was compelled to bear away for Batavia to repair. *Hastings Rock*

Some months after the discovery of this rock, H.N.M. corvette Anna Paulowna, under command of Lieut. Fokke, was sent to search for it, and to determine its position. Four days he cruised in vain about the place where the rock had been reported; and then anchored in latitude 6° 6$\frac{3}{4}$′ S., the extreme ends of Bavian bearing N.N.E. and N.E. Boats were sent in different directions, but without being able to find this rock; but everywhere regular soundings of 38 and 39 fathoms. Another rock was found, with 5, 7, and 9 fathoms upon it, but only 3 or 3$\frac{1}{2}$ miles distant from the island, and with 30 fathoms close to. When the corvette was anchored near the south side of this rock, the extremities of Bavian bore N.b.E. and E.N.E. $\frac{1}{2}$ E., which differs so considerably from the place of the Hastings Rock, as well as in its depth under water, that it cannot be the same danger.

165. The Arrogant Reef, in 5° 12′ S., and 113° 0′ E. by a mean of the chronometers of H.M. ship Arrogant, and those of the Dover Castle, which agreed within four minutes of arc, lies about 11 leagues N.N.E., of Bavian, having been discovered, in 1802, by the former ship. It was examined by the boats, and found to extend about a quarter of a mile N.W. and S.E. with only 5 or 6 feet water, where they could approach in safety, from the breakers. There were from 5 to 12 and 25 fathoms *Arrogant Reef.*

* The above bearing would place the rock in 112° 34′ E.

round it at the distance of a cable's length. This reef is just in the track of ships from Batavia to Macassar and the Molucca Islands, and may be avoided by keeping within 6 or 7 leagues of Bavian, or between the latitudes of 5° 25′ and 5° 30′ S. When past Bavian, the course of E. b. S. will carry a ship to the southward of the Solombo Islands, in soundings from 32 to 37 fathoms; but when 3 or 4 leagues past them, caution is required on account of the following danger.

Rosalie Rock. The Rosalie Rock was discovered, in 1823, by Capt. Baptist, of the Dutch Indian ship Rosalie, on her passage from Sourabaya to Macassar. According to his statement, it lies in 5° 56′ S. and 8 leagues S.S.W. ¼ W. from Great Solombo, which brings it in longitude 114° 15½′ E. Rosalie Rock has the appearance of a small island of reddish sand, with one tree in the centre; it seemed to be about 6 feet above the sea, and all round it small rocks above water, which was very deep, as the ship was at anchor in 42 fathoms, at 1 mile distant.

Solombo Islands. 166. Very little appears to be known of the Solombo Islands; the southernmost and largest is said to be 5 or 6 miles in length, from N. to S., where it terminates in a high flat-topped hill, visible 8 leagues off. This hill is in 5° 33′ S., and 114° 28′ E., or 7° 36′ E. from Batavia.*

Little Solombo. The middle island, or Little Solombo, is about 3 leagues to the northward of the former, its eastern extremity bearing N. ¼ E. from the hill of Great Solombo. Its centre is in 5° 21½′ S., 114° 28′ E. This island is neither so large nor so high as the former, and between them the channel is 6 miles wide, and considered to be safe.

Arentes Island. Arentes Island, the northernmost of the group, is in 5° 10′ S., and 114° 34′ E., and bears N. b. E. ¾ E., about

	°	′	″	
* Capt. Horsburgh places it in -	114	28	0	E.
„ Heywood - - -		28	0	
„ Moll, D.R.N., in 1838 - -		25	30	
„ Bouricius „ 1841 - -		23	40	
„ Bars - - - -		24	26	
Lieut. Ryser, D.R.N., in 1840 - -		29	12	
H.N.M. Steamer Phœnix -		30	0	
Mean - -	114	26	58	E.

it probably lies a little farther to the eastward.

6 leagues from Little Solombo; a little islet lies off its south end. The channel between it and Little Solombo seems to be safe, and the south end of Arentes may be passed at the distance of 3 or 4 miles, but the western side should be approached with caution, on account of a rocky spot, upon which (Horsburgh says) an American ship struck, in January 1794; the captain reporting that he had 18 fathoms just before and after striking, and one cast of 5 fathoms immediately after the shock: the track of 18 fathoms should therefore be avoided. This rock must lie about 3 leagues west from Arentes, but its position has not yet been accurately ascertained.

Twyfelach (doubtful) Rock.

167. Giliang is a small flat island, in 7° S., and 114° 14′ 30″ E., and about 3 miles E. from the east point of Madura. The passage between them was surveyed, in 1822, by Lieut. Fokke, who found there from 5 to 16 fathoms water, soft ground, but a very narrow channel, occasioned by the shoal spit which projects from the east point of Madura, and upon the edge of which there are but 3 fathoms. A small shoal, with 3½ fathoms water, lies a mile west from the north point of Giliang; and a large bank with 1½ fathoms shoalest water stretches N. and N.N.E. as far as 3 miles from the east point of Madura. When a vessel takes this channel, she may safely borrow within half-a-mile of Giliang; and if bound to Sumanap, the course of S.S.E. must be steered when past Giliang, her head being brought upon the east point of Talango Island, in soundings of 5 to 9 fathoms, when Lawak Island will speedily appear in sight.*

Giliang Island.

* Giliang, Talango, and Lawak, are called by Horsburgh—Pondy, S.E. Island, and Turtle Island.

In the "Java Guide," by Lieut. Smits, D.R.N., we find the following data for the position of the north point of Giliang:—

		° ′ ″	° ′ ″
By Lieut. Fokke - -	in 1822	6 58 30	114 14 45 E.
„ Capt. Ashmore -	1822	55 15	12 38
„ H.N.M.S. Amphytrite -	1834	55 15	16 56
„ „ Zaan -	1837	- -	10 15
„ „ Maas -	1839	- -	15 0
„ „ Rotterdam -	1840	59 45	14 20
„ „ Windhond -	1842	- -	13 0
„ „ Merapie -	1845	55 20	13 30
„ „ Pylades -	1846	58 50	—
	Mean -	6 57 7	114 13 25 E.

Tambaga Rocks.

168. There are, however, the two dangerous rocks of Tambaga, which, according to Lieut. Fokke, lie 4 miles east from Sarotak Point, the south-eastern angle of Talango Island; N.E. b. N. from Lawak; and S. b. W. ½ W. from Giliang. At low water, these rocks are even with the water's edge, and lie about a mile distant from each other, with 10, 20, and 24 fathoms close to.*

Lieut. F. C. A. Van Kervel, D.C.N., says that it is not advisable to pass between them, as it appeared to him that there was not sufficient depth. Four miles N.E. of these Tambaga Rocks there is another, which was discovered, in 1822, by Lieut. Fokke, and named, after the vessel he commanded, the Jacoba Elisabeth; but it need not be avoided by ships, as the shoalest water upon it is 7 fathoms, with 22 and 30 fathoms all round. It bears about W. ¾ S. from the N.W. point of Sapoedie, and N.W. ½ W. from its S.W. point.

Jacoba Rock.

Sapoedie Island.

Sapoedie Island, called by Horsburgh, Galion, or Respondy, lies between 7° 3′ and 7° 10½′ S., and the west point in 114° 20′ E.; it is larger and higher than Giliang; both are well cultivated, and bear a fertile and pleasant aspect.

Sapoedie Strait.

169. Sapoedie Strait, or the channel between the two last-mentioned islands, is 6 miles wide, and the usual track for vessels bound to the Strait of Baly. Besides the above-described rocks of Tambaga and Jacoba, there are no dangers; and though the soundings are very irregular, veering from 10 to 30 fathoms, yet it is a very good channel, and preferable either to that west of Giliang, or east of Sapoedie. South of Sapoedie the depths increase rapidly to 50 and 100 fathoms; and the course to be steered to Cape Sedano is about S. b. E.

Channel E of Sapoedie.

According to Horsburgh, there is a safe channel to the eastward of Sapoedie, with moderate depths, between it and the isle of Ra-as (called by him Great Hog Island). Lieut. Boedrie in H.N.M. schooner Iris, coming from Kangeang Island, had steered for Sapoedie; and when hauling to the southward along the eastern side of Manok Island, into the above

* Lieut. I. Schroder, commanding H.N.M. brig Postrijder, observed these rocks bearing W. ½ N., when in one with the S.E. point of Talango, and N. b. E. ¼ E. when in one with the E. point of Giliang; and he adds that according to a Sumanap pilot, there is another rock about a mile S. of the Tambagas.

eastern channel, he found a rocky shoal upon which were but 2 fathoms. This spot bore W. $\frac{1}{3}$ S. from Sarok Island, and N. $\frac{1}{4}$ E. from the west point of Ra-as. The shoal is round, about a cable's length in diameter, and very dangerous for all vessels passing through this channel from Sumanap to Kangeang or Macassar. *Rock off Manok.*

170. Lawak (Horsburgh's Turtle Island) lies in 7° 12′ 30″ S., and long. 114° 7′ E., or 4′ 20″ W. of the eastern point of Madura, according to Lieut. Fokke's Survey in 1822. It is a small sandy island, covered with trees, and discernible 8 miles. Between this island and another more to the westward, Genting, but nearer to the Lawak, there are two rocks above water; and, according to Horsburgh, another shoal with 2 or 3 feet water lies S.W. b. S. from the east point of Talango, and west or W. b. N. from Lawak. *Lawak.*

171. Sumanap (the Flagstaff) lies in 7° 2′ 30″ S., and 113° 58′ 30″ E.; or 12′ 50″ W. of the east point of Madura; it is a considerable town, and furnishes fresh water and provisions of all kinds. The adjacent country abounds with rice and timber, several coasting traders being built here. The bay is margined by a soft mud-bank, so that ships are obliged to anchor at a great distance from the shore. Large ships anchor in 5 or $5\frac{1}{4}$ fathoms, 4 or 5 miles from the fort. H.N.M. corvette Amphytrite anchored in this depth; the Flagstaff bearing N. b. W. $\frac{3}{4}$ W., the east point of Talango E. $\frac{1}{4}$ S., the N.E. point of Genting S. $\frac{3}{4}$ E., the east point of Radja S.W. $\frac{1}{2}$ W., and Lawak S.E. $\frac{1}{2}$ E. Small vessels anchor more in-shore, about $2\frac{1}{2}$ miles from Sumanap, in 3 fathoms mud, the Fort bearing N.N.W. $\frac{1}{2}$ W., the south point of the bay S.S.W. $\frac{1}{4}$ W., and S.W. point of Talango, S.E. $\frac{3}{4}$ S. *Sumanap.*

Ships coming from the southward, and intending to touch at Sumanap, should first make Lawak, pass on its eastern side, and stand in along the south side of Talango for the anchorage. The passage between Lawak and Genting is not to be recommended, on account of the above-mentioned rocks; nor should Genting be approached too near on its northern side, as two rocks, Noko and Gemer, lie $1\frac{1}{2}$ and 1 mile from it; both, however, are above water, and discernible at some distance. The channel leading to Sumanap, between Genting and Radja, is safe, with 19 to 8 fathoms water; but a berth of about a mile

should be given to these islands on both sides, as reefs project nearly to that distance. Channel passed, steer N.E. b. E., in 8 fathoms depth, close round the south point of the bay, for the anchorage.

Along the Madura coast there is in most places soft mud, except upon the reef near the east point; but among the islands there will generally be found hard sand or rock at the bottom.

Tides. Lieut. Fokke gives the time of high water, in the middle of the East monsoon, at noon; but in November about midnight. In common tides the rise is 5 feet, and at springs 7 or 8 feet. Sometimes he experienced a current among the islands, of $2\frac{1}{2}$ miles per hour.

Gilingan Rocks. 172. In the neighbourhood of the islands of Gilingan and Radja, other dangers have been discovered by the steamers Hecla and Merapie. The former, in 1844, saw a reef, bearing N. when in one with the western point of Radja, W. b. N. when in one with Gilingan. In the following year, the Merapie saw a reef bearing N. when in one with the S.E. point of Radja, N. b. E. in one with its W. point, and N.W. b. N. when in one with Woetak; the discolouration of the water and the ripples showing that it was shallow. Again, the Merapie, having run 30 miles at night from Bokhen Island, struck on a 9 feet rock, and having floated off with the flood before daylight, took the following bearings as soon as objects were visible; the S.W. point of Radja, N.W. b. W.; Genting Island from N. $\frac{1}{2}$ W. to N.E. $\frac{1}{2}$ N.; and Cape Ringit S. $\frac{3}{4}$ W.; which would place it in 7° 18′ S. and 113° 58′ E.

Boender and Tiandie. 173. Boender and Tiandie are two places in a bight of the South coast of Madura, about 6 leagues west of Sumanap. These places are sometimes visited by trading ships, to take in salt, which they produce in abundance. A great many dangerous rocks and reefs lie in this bay, and make it necessary to approach it with caution, the more so as the fishing stakes indicating their position being sometimes washed away by the sea, no implicit reliance can be placed on them.

Doca Islet. Mr. Muller, who surveyed this bay in 1834, says that the best track is along the west side of Doca, between it and the

Rankan Rock. rock of Rankan. Doca is a small island, distinguishable by three tufted trees upon its south point, and Rankan Rock is also discernible afar off, as it is some feet high, and consists of

white sandstone. A ship coming from the eastward should not approach Doca too near, on account of a coral reef which projects to the south westward; but should bring it to bear N.E. b. N., at the distance of $1\frac{1}{2}$ miles; from thence steering N.W. b. N., or N.N.W. till it bears E. $\frac{1}{2}$ S., and then N. and N. b. E. towards the anchorage, in 5 or 4 fathoms mud, on the N.W. side of that islet. This is the anchorage in the eastern monsoon, but in the western monsoon a good anchorage may be obtained in $3\frac{1}{2}$ or 3 fathoms, sandy bottom, near the river of Tiandie. Boender and Tiandie both are situated on rivers, at some distance from their mouths, particularly the former, which is several miles up the river. Off the mouths of these rivers lie mud banks and coral rocks, which make it very troublesome to get a cargo shipped; especially in the eastern monsoon, when there is sometimes a high sea running. The proas are then sometimes five or six days in going from Boender towards the ships; besides being often in danger of being thrown upon the rocks near the mouth of the river.

174. In the eastern monsoon the tide sets N.W. and S.E., and in the western monsoon E.N.E. and W.S.W. In common tides the rise is $5\frac{1}{4}$ feet, and in the springs 8 or $8\frac{1}{2}$ feet. *Tides.*

175. A chain of small islets and rocks stretch eastward of Sapoedie as far as Kangeang, an extensive island, the N.W. point of which is in 6° 50′ 30″ S., and 115° 16′ E., or 8° 24′ E., of Batavia. In former charts all these islands were represented very incorrectly, but the recent observations of various officers of H.N.M. Navy have made these islands better known.* *Kangeang.*

The north-western part of Kangeang is high and rugged, but clothed with trees; the eastern part is less high, with a more even appearance; and in the S.W. part the land is low and bushy. It is a very fertile island, governed by the Sultan of Sumanap, and scantily peopled; but visited by trading proas from Baly, Sumanap, and Bawean. Sometimes this island is subject to invasions. Some years ago 60 or 70 pirate proas landed there, and effected considerable damage. Near the N.W. point of Kangeang lies the small island of Manpoeriet, which is of considerable height, and visible as far as that N.W. *Manpoeriet.*

* The above position is the mean of observations by Capt. P. Machielson, and Lieuts. Baars, Gregory, Schroder, and Gevers, all of the Dutch Royal Navy. *See* chart of Islands east of Java.

point; *i.e.*, in clear weather, about 8 or 9 leagues; and it is surrounded by a coral reef, which projects at the N.W. and W.N.W. sides about 3 miles. Between Manpoeriet and the N.W. side of Kangeang, there is a bay of a mile wide, in which are several rocks; the village of Katapan is situated in this bay. According to Lieut. Jolly, a ship having cleared the reef of Manpoeriet, may steer mid-channel into the bay, till Manpoeriet bears N, when a good anchorage will be found in 10 fathoms depth. This is a fair and safe berth in the S.E. monsoon, and it is not advisable for large ships to stand farther in, as coral reefs project in some places a mile off shore. Small vessels may go farther in, and anchor in 5 or 4 fathoms, but it will be prudent, even for them, to send a boat ahead, sounding. H.N.M. steamer Hecla anchored there in April, 1843, in 6 fathoms, with Manpoeriet N.W., and the flagstaff near the village of Katapan, E. ½ S.; the northern part of the bay is shoal; and a reef projects from the S. point, with 6 fathoms close to it. Sailing vessels should not run in farther than to bring the island to bear N., as there is little room to tack; and in the eastern monsoon they may safely anchor in from 16 to 28 fathoms about 3 miles off shore. There are some refreshments to be had there, and a little good water may be found in two wells upon the beach; when much is wanted they will prove insufficient, as they speedily dry, and require a considerable lapse of time to fill again. In the north-west monsoon a large ship will not obtain shelter against hard winds and high seas, for which reason the bay at the southern side will be preferable in that season, where very probably a good anchorage may be found, as H.N.M. frigate Maria Reigersbergen anchored there in 1805.

Katapan Bay.

176. Kamirian, or Urk Island, in 7° 4′ 15″ S., and 115° 15′ E., or 8° 23′ E. of Batavia*, is of a circular form, very woody, not

Kamirian or Urk Island.

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* The position of Kamirian is important, because that of Kangeang and the longitudes of the adjacent Islands have been deduced from it; the following are our authorities:—

Lieutenants Baars and Gregory:—

	°	′	″		°	′	″		
In 1836, 7	4	30	S.	8	20	23	E. of Batavia,	115	12	23	E. of Greenwich.

Lieutenant Schroder:—

In 1840, 7	4	17	S.	8	15	0	„	115	7	0	„

Lieutenant Gevers:—

In 1843, 7	4	0	S.	2	26	32	E. of Sourabaya,	115	13	12	„

very high, with a sandy beach all round, but which projects most to the westward. The passages on both sides of Kamirian are safe, with 40 and 50 fathoms depth in the middle, 25 near the island, and 15 and 10 on the Kangeang side. These passages are of importance to ships coming from New Holland and bound to Singapore or Bengal, and are often preferred to Salayer Strait when coming from Banda or the Moluccas, in the strength of the east monsoon, and going to Batavia. The passage to the eastward of Kamirian is 4 miles wide, and has no dangers, as the reefs project from the S.W. point of Kangeang about a mile only; and the passage west of Kamirian between it and Takat, is at least 4 miles wide, and has no dangers, the reefs on either side showing their edges by the discolouration of the water.

Takat Bank.

177. Karang Takat Bank, sometimes called the Four Brothers, is an extensive coral shoal, which stretches E.S.E. and W.N.W. for a length of 4 leagues, with three dry patches, elevated 2 or 3 feet above low water. These patches are called by the natives Takat Gomok, Takat Fimor, and Takat Tinga; two of them are near the extreme ends, and one in the middle of the bank. According to Lieut. Boedrie, in 1827, and Captain Machielsen, in 1834, the southernmost part of the bank bears about W. $\frac{1}{2}$ N. from Kamirian, and the northernmost part of it S.W. b. W. $\frac{3}{4}$ W. from the N.W. point of Kangeang. This shoal is very steep-to, as Lieut. Gregory, who passed very near it in 1836, in H.N.M. corvette Boreas, states that at the distance of half a mile E.N.E. from its north-westernmost point he had 39 fathoms, and at half a mile from its S.E. point, Urk Island bearing E. b. S., there was no bottom with 45 fathoms. With a good look-out at the mast-head, this dangerous shoal will be discernible at a considerable distance by the colour of the water, except when in the direction of the sun.

Lieutenant Kyoir:—

	°	′	″		°	′	″	
In 1843 .	- 2	29	28	E. of Sourabaya,	115	16	8	E. of Greenwich.

Lieutenant Washington:—

In 1843, 7	4	0	S.	2 27 0	,,	115	13	40 ,,

Lieutenant Sandifort:—

In ——, 7	4	45	S.	8 23 0	E. of Batavia	115	15	0 ,,

The mean of these observations, after assigning to them proportionate values, gives the longitude as above stated; of the latitude there can be no doubt, however extraordinary it may appear, that Horsburgh places Urk in 7° 15′ S., or 11 minutes too far to the southward.

178. The passage west of Takat, between it and the small islands of Kamoedie and Goo, is about 3 or 4 leagues wide, and is said to be safe; but as we can collect but little information about this channel, the utmost care and prudence is to be recommended to vessels proceeding through it.

In 1844, some vessels, under the command of Lieut. Hooft, passed close to the southward of Ra-as and of the islands to the eastward of it, and observed no dangers in the offing; but the English ship Islay, in 1843, struck upon a coral rock there, with only 13 feet. According to the account of her captain (Galt), it lies 5 miles S.E. b. E. from Little Ra-as, or Toendo Island, as it is now called.

CHAPTER VII.

MADURA STRAIT.

179. VESSELS bound from Sourabaya to the Strait of Madura ought to provide themselves with pilots, as the channel called the Trechter (or Funnel) is very narrow, and has but scarcely sufficient depth for a large ship. When bound from the Strait of Madura to Sourabaya, they will find pilots at Passoeroean. In the Trechter there are two channels, one of which having been lately discovered by Lieut. Jansen, is called the Jansen Channel. It leads along the Java shore, while the old channel, lying more to the eastward, passes close to the Gezonken (sunken) Fort, commonly called Daendels Fort. But before we enter either of those channels, it will be satisfactory to give some remarks upon the tides in the Trechter, which affect them both equally. *Trechter Channel.*

180. The tides in many parts of these seas are attended with considerable peculiarities and difficulties, and none more so than those which pass through the Trechter; they have been carefully investigated and elaborately described by Lieut. M. H. Jansen, D.R.N.; but for the general purpose of these instructions the following briefly-stated facts will probably be sufficient. It has been seen (Art. 150) that on the Zee-bank there are for a few months two tides in the 24 hours; but that, for the major part of the year, there is only one high water in that interval; in the Trechter, on the contrary, there are always two distinct tides, though they differ materially in height, according to the sun being north or south of the equator. Secondly, the rise and fall of the water in the Trechter, springs and neaps, are $8\frac{1}{4}$ and $5\frac{1}{4}$ feet; which being much greater than the correspondent rise and fall on the Zee-bank, it follows that the stream sets to the northward through the Trechter from two hours before till two hours after high water, a circumstance very favourable to vessels entering from *Tides in the Trechter.*

the southward, and equally troublesome to those that are bound to the eastward from Sourabaya.

Jansen Channel, outward bound.

181. When bound to the eastward, from Sourabaya, steer E. b. N. to clear the Java Bank, which is steep-to, keeping the end of the Navy-yard to the southward of W. b. S. If beating out, do not approach the Madura shore nearer than 7 fathoms; and on the Java side tack immediately that there is less water than 10 fathoms. If compelled, by calms or other circumstances, to anchor, avoid doing so near Madura, as the bottom there is rocky, and an 8-feet shoal lies some distance off the shore; but from it the 7 fathoms line is sufficient security. In steering towards the northern entrance of the Jansen Channel, keep as near as can be done with safety to the Java Bank, in order to haul in close round the beacon off the point of Kalaban; for the eastern stream, instead of bending round the beacon, sets across the channel and upon the

Tong Shoal.

Tong, which is the name of the long shoal that forms the eastern side of the Jansen Channel. When once in the channel the stream takes its direction; and beacons will be found on either side, those to the westward with baskets, and those on the Java side without them. A course of S.E. b. S. will lead fairly between the beacons; and the water will gradually shoal from the entrance in 7 fathoms to 4 fathoms, near the

Potee Flat.

fishings stakes off Potee Point, and abreast of them to 22, or sometimes to 18½ feet. Deeply-laden vessels are, therefore, obliged to anchor there, and wait for high water. Along the whole length of the Tong, the banks are steep-to on both sides, and, therefore, when working, vessels should tack short of the line of the stakes; and indeed in the narrowest part, abreast of Kinderan, although a mile in breadth, it is advisable for them to drive with the tide, which runs there with great velocity—even 8 knots it has been asserted! The Java Bank, to the southward of those narrows, is a little more gradual in its slope, but still too steep to make free with; and

Kletta Rocks.

the Kletta Rocks, though beaconed, should not be appproached without great caution. Still farther to the southward, the edges of the banks become flatter, and vessels may borrow on them by the lead.

When off Potee, with a fair wind, look out for two conspicuous trees near Tjoempat, on the Java shore, and bring

them in one about N.W. with the western extremity of Madura; the opposite course, S.E., will lead out to sea in the best water. Outside of the South Beacon, on the Java Bank, there is a black buoy in 13 feet; and outside of the South-east Beacon, on the Tong Bank, there is a white buoy in the same depth. From the white buoy a vessel may proceed to the eastward; or, when the black buoy is rounded, a south course will lead to Passoeroean.

Jansen Channel, inward bound.

182. To make the Jansen Channel from the southward, steer north for the Zadelberg on Madura, the well-known saddle-hill of the pilots, till the black buoy and the beacons are distinguished. If the vessel's draught requires that she should wait for high water, let her anchor to the eastward of the black buoy, but she should not bring it to the southward of west. When again under way, get as quickly as possible into the line of the Tioempat trees, which may be seen a long way off; keep them in one with the western extremity of Madura; and then, following that leading mark, run to the north-westward till abreast of Potee. The Ryn frigate, Captain Johr, was the first large ship that passed through this channel. In November 1848, she left Passoeroean Road in tow of a steam-tug at 3 P.M., under full steam and sail, and anchored in Sourabaya Road at 8 P.M. It was neap-tide, and she drew upwards of 18 feet, but no mud was perceived in her wake.

Old Trechter Channel.

183. We shall now conduct the navigator from Sourabaya to Passoeroean by the eastern or Old Channel, which, as we have said, leads pretty close to the S.W. side of Daendels Fort, a large collection of stones, brought there for the purpose of building a fortress which should command the Pass and thrown promiscuously into the water. According to Lieut. Van Kervel, who surveyed the channel in 1832, this foundation is 188 yards long, N.N.E. and S.S.W., 123 yards broad, and a part which remains always visible at low water is 80 yards long. The depths are at low water, close to the foundation, 10 to 15 feet; its distance from the nearest shore of Madura is about $1\frac{3}{4}$ miles, and from Sourabaya, 10 miles. There is a beacon upon these dangerous stones, some bamboo stakes, supporting a basket, and discernible at a considerable distance. The Channel leads along the S.W. side of the Fort, and this is its narrowest and shallowest part, as no more than 2 fathoms depth will be found

Zadelberg Hills.

at low water. The rise and fall of the tides is in this place three-quarters to 1½ fathoms. From off the Fort, the Zadelberg Hills on Madura will be seen bearing N.W. ½ N., N.N.W., and N.N.E. The easternmost is the highest of the three, and may be distinguished by two conspicuous trees at its foot; this hill is the great mark for the pilots throughout the strait; the middle one is not so high and seems chiefly to be composed of high trees; the westernmost is also of moderate height, and resembles a saddle more than the others. This passage should never be attempted without a pilot, but, even then the following remarks and directions will not be useless.

Old Channel, outward bound.

184. When leaving Sourabaya Road with a fair wind the course is E.N.E. to the Madura shore, in order to clear the mud bank, which projects a considerable distance off the Java shore, east from the river, leaving nothing but a small channel between the two banks, and also to avoid the indraught of the Jansen Channel. The depths will gradually decrease from 10 to 4 fathoms; when you may steer E. or E.b.S. at 2 miles distance along the Madura shore, till the village Kwanjer bears N., where there will be only 3 fathoms at low water, mud bottom. From thence, the channel becomes still more contracted and the water shoaler, and a large ship is obliged to anchor there to wait for high water. When she weighs she must steer for the beacon of Daendels Fort, about E.S.E., and pass to the southward of it, at half a mile distance, where at high water not quite 3 fathoms, and at low water 2 fathoms will be found.*

The land breeze seldom reaches far off shore, and therefore when leaving Sourabaya beat up along, in the eastern monsoon, the Madura shore, and borrow on the Java side only as near in as 9 fathoms, the mud-bank being here steep-to. A little further out, both sides may be approached to 3 and 2½ fathoms. To beat to the eastward, except with an eastern stream, is impossible; and therefore the Jansen Channel, throughout

* According to Lieut. T. A. G. Rietvelds, a conspicuous point of the Madura shore bears from the Fort E. ¼ N., and the outermost point of the island, or Cape Belega, E. a little southerly. Lieut. Jansen gives the following bearings from the spot where the stones dry at low water: Mount Penang S.W. ¾ S. and Mount Ardjoeno S.S.W. ¾ W., placing the former in 7° 38′ 3″ S., and 112° 39′ 49″ E., and the latter in 7° 44′ 42″ S. and 112° 36′ 57″ E.

which the land breeze prevails, is by far the most eligible during the eastern monsoon.

When past Daendels Fort, proceed S.E. b. S. and S.E. till it bears N.N.W. $\frac{1}{2}$ W., 4 miles distant, when the three hills of Zadelberg will be visible at the E. side of the Fort; from thence the depths increase speedily, and edging away, the courses of S.b.E. and S. will carry a ship into Passoeroean Road. From Daendels Fort, do not haul too quickly to the southward, as the bank on the Java side consists of hard sand. Between the sunk Fort and Passoeroean a mud-bank projects a considerable distance off shore, with a dangerous knoll, called the Slatan, which makes it advisable not to borrow on the Java shore nearer than 7 or 6 fathoms. A ship should also mind the dangers S.W. of Kambing Island, especially when working to the southward, but these will be described in the following lines. *Passoeroean.*

To touch at this place the pilots have a mark on shore of four or five very conspicuous trees, in the vicinity of the town, and the mark for standing into the Road is a small dark bush, at the mouth of the river, and near a single house, bearing S. $\frac{1}{2}$ E. The anchorage is 3 or 4 miles N.N.E. to N.E. from the flagstaff, and N.W. b. W. $\frac{3}{4}$ W. or W.N.W. from Warangan Point, in 5 or 6 fathoms mud. The position of the flagstaff is 7° 39′ 30″ S., and 112° 56′ 10″ E., or 9′ 30″ E. from Sourabaya by chronometer.* Pilots may be procured here for Sourabaya.

185. Ships going from Passoeroean to Sourabaya by the old channel of the Trechter should leave the road with the courses of N. $\frac{1}{2}$ E. and N., not borrowing towards the Java coast nearer than in 7 fathoms: 7 to 10 fathoms with a working wind seems to be the proper channel. In clear weather the conical-shaped mountain Penang, also called Djapan, will be seen about W. $\frac{1}{8}$ S. from Passoeroean Road; and when, advancing to the northward, it is brought to bear S.W., the vessel will be 19 miles from Passoeroean and 6 miles from Daendels Fort; the depths will be diminished to 7 and 6 fathoms, and along the *Old Channel, inward bound.*

* The mean meridian distance between the flagstaffs of Sourabaya and Passoeroean, according to the observations of five officers of the D.R.N., is 9′ 30″ E., which applied to 112° 46′ 40″, the longitude of the former, gives the result stated in the text.

eastern side of the Java banks, which in some places consist of hard sand. From this place a good mark to enter the old Trechter channel are the three hills of Zadelberg on Madura. The westernmost of them should be brought N.N.W., and by steering for it the beacon of the Fort will come in sight, on the bearing of N.W. b. N. The channel lies half a mile to the southward of the Fort, and then takes a gradually more westerly course along the fishing stakes towards the Madura shore, passing, at 2 miles distance, the village of Kwanjer. From Kwanjer the course of W. and W.S.W. leads towards Sourabaya Road, where the shipping soon will be perceived, and kept well on the port bow, in order to clear the mud-bank along the Java shore.

Kambing Island.

186. Kambing Island lies in 7° 19′ 30″ S. and 113° 15′ 40″ E., or 29′ 0″ E. from Sourabaya by chronometer; it is about a mile in extent, woody, not high, but visible in clear weather at the distance of 4 or 5 leagues. It is surrounded by a coral reef, close to which there are from 14 to 20 fathoms, and then shoaling gradually toward Madura into 4 fathoms. A ship coming from Sourabaya and bound to the eastward through the Trechter channel should steer from Daendels Fort about E.S.E. to Kambing. When passing it to the southward there are dangers, to avoid which will be presently mentioned; and on its northern side give a good berth to the Madura shore, as a bank projects therefrom of mud and sand, but which may be approached to 5 fathoms depth.

Channel along Kambing.

Kambing dangers.

187. South-westward of Kambing there are several shoals which are very dangerous for ships proceeding through this passage, and several others have been reported; but by comparing the different descriptions with each other we may conclude that the following shoals do exist.

Koko Reef, or Zwaantjes Droogte.

1st. A coral reef of half a mile in breadth, called by the natives Koko, and by the Dutch Zwaantjes Droogte; one part of it is always in sight, and consists of white sandstone. This shoal was surveyed, in 1822, by Lieut. Bartels, D.C.S., and, in 1824, by Lieut. Elgenhuizen, and their reports agree very well with each other. It bears S.S.W. $\frac{3}{4}$ W. 12 miles from Kambing Island, and lies in 7° 30′ 30″ S. Close to it there are 12 fathoms water, increasing speedily at the western side to 20 fathoms at 4 miles off, and at the southern side to 22 fathoms. Lieut. Elgenhuizen says he once saw it wholly covered by the sea, but

with a good look-out it always will be seen at the distance of 4 miles.

2dly. A rock, with a sand-bank, both also examined by Lieuts. Bartels and Elgenhuizen, and called Boera; it is about 1½ or 2 miles in extent, and bears N.W. ¾ N. 5 miles from Koko Reef, and about S.W. b. W. 11 miles from Kambing.* Upon the shoalest part there is half a fathom water, and in other places 1 and 2 fathoms: on the southern side it is steep-to, with 20 fathoms close to it, and at the northern side the depths gradually increase to 20 fathoms. *Boera Rock.*

3rdly. A small rocky shoal, discovered in 1841, by Capt. H. H. Deuling, in the Dutch barque Eendragt. Coming from Passoeroean and rounding Madura, she was driven by the wind and current near the Koko Reef, when suddenly rocks were seen very near, upon which there seemed to be not more than 2 or 3 fathoms water. The ship was then in 4 fathoms, with the Koko bearing W. b. N. 3 miles distant, and the Island of Kambing N. ½ E. When past the bank the ship was in 16, and soon after in 23 fathoms. *Eendragt Shoal.*

4thly. A small rock or bank under water, two ships' lengths in extent, and found, in 1822, by Lieut. A. Bartels, D.C.N., to bear S.W. b. S. and S.W. ¼ W. from the extremities of Kambing Island 3 or 4 miles distant, having 2 fathoms water on its shoalest part, and 16 fathoms between it and that island. *Shoal near Kambing.*

5thly. A small shoal of 1½ cables in length, examined in 1824, by Lieut. Elgenhuizen, and found to bear S.W. b. S., 2 miles from the west point of Kambing Island. There were 4 feet water upon it at the time, being half tide, and therefore at low water 2 feet. It seems to correspond in place with that laid down in some charts as the Kabeljaauw Bank. *Kabeljaauw Bank.*

188. Ships bound to the eastward from Passoeroean should generally make their easting along the Java shore, in order to profit by the land and sea winds, which blow with more regularity and strength than on the Madura side; besides which, if becalmed or set to the westward by the current, they may *Winds.*

* According to Lieuts. Rietvelds and Boom, the E. Saddle Hill on Madura bears from this shoal N.N.W. ¼ W., Lamongang volcano S.S.E. ¼ E., and Kambing Island N.E. b. E. It is probable that the shoal reported in 1822 by Capt. Wente, of the Dutch ship Lucia Maria, was the Boera, although the bearing he gave of the Saddle Hill (N. b. W.) would place it more to the westward.

anchor on the Java side. In the eastern monsoon, during the day, S.E. b. E. and E.N.E. winds prevail, in the night commonly a brisk S.S.W. or S.W. land breeze, and often in the forenoon followed by light baffling winds and calms. In the western monsoon, N.N.W. and W.S.W. winds blow very hard, sometimes declining in the evening, and often veering to S.W. and S.S.W. in the night: the current generally runs east or west, but that depends on the prevailing wind.

189. The winds, however, in the Strait of Madura are more variable than any other part of the coasts of Java and Madura, arising not only from the contraction of the passage, but, perhaps, from the influence upon the atmosphere of the several high mountains, among which are some active volcanoes, in the eastern part of Java. Very frequently variable and suddenly shifting winds and squalls are experienced in this strait.

190. Ships leaving Passoeroean with a favourable wind may steer from E. to E.N.E., towards Warangan Point, when Katapang Island will be discovered. Although the passage between the coast of Java and Karang Koko seems to be free from dangers, it is advisable to keep a sharp look-out on account of a rock which is marked in some charts under the name of the Wolf. According to Lieuts. J. H. Bastiaanse and Van Kervel, D.C.N., the natives asserted the existence of this rock, and that it lay 4 miles north of Warangan Point;* but Lieut. Elgenhuizen, when surveying these waters in 1824, at various times examined its supposed place, with proas and boats, without success; the natives accompanied him, denying that there were any other dangers thereabout than those near the island of Kambing. Lieut. Rietveld, too, and other persons well acquainted with these waters, declare that they never heard of this rock from any proper authority; and, consequently, its position remains still doubtful and uncertain. H.N.M. frigate Ceres, in 1847, made several attempts to find it

Wolf Rock.

191. Katapang, or Krabben Island, in 7° 41′ S., and 113° 19′ 10″ E., or 32′ 30″ E. of Sourabaya by chronometer, is not high, but woody; about a mile east and west, and half a mile north and south. It is surrounded by a broad coral reef, which

Katapang, or Krabben Island.

* In an old M.S. chart of the Strait of Madura, the Wolfs Klip N.N.E. ½ E. from Warangan Point bears N.E. b. E. ½ E. 5 miles from Passoeroean, and N.W. b. W. ½ W. from Katapang.

projects fully a mile to the eastward, with 15 fathoms close to its E. and N.E. sides, and 10 fathoms at the W. and S.W. sides. When not bound to Probolingo, or to one of the adjacent places, keep well to the northward of Katapang, but at the same time giving a good berth to the dangers near Kambing. A ship may safely approach the Java shore till Mount Ringit bears south, as no dangers have been discovered on the coast to the westward of it, except a little to the eastward of Cape Bedoelang, where there seems to be a shoal 2 miles from the shore. H.N.M. schooner Argo, under the command of Lieut. J. H. Matthysen, while beating to the eastward in September, 1846, ran in shore S.E. b. S. at 6¼ P.M., to anchor for the night between Bedoelang and Mount Loros. She shoaled her water gradually from 24 to 10 fathoms, and immediately afterwards to 3, and then struck; although by the chart she should then have been in 9 fathoms. At midnight she floated off, and passing over a 2 fathoms' bank, brought up in deep water.

192. Probolingo flagstaff is in 7° 45′ 30″ S., and 113° 14′ 33″ E.; *Probolingo.* the town lies in a bight of the coast, opposite Katapang, that island bearing N.E. ¾ N., Warangan Point W.N.W., and Mount Lamongan, S.S.E. ½ E. The coast may be approached in this bight safely, with due attention to the lead, there being at 2 miles distance 4 to 6 fathoms, at 3 miles 7 and 8 fathoms, and so on, gradually increasing. A vessel going to Probolingo may pass either east or west of Katapang, but should not approach it within 2 miles. The common anchorage in the road is in 4 or 5 fathoms, with the flagstaff bearing about S.S.E., Katapang N.E. ½ N., and Warangan Point about W.N.W. ¼ W. This place is often visited by ships in want of water or refreshments, both of which are excellent. The river is elongated by a pier.

193. Mount Lamongan, or Belierang, is an active volcano, about 17 miles S.E. b. S. of Probolingo. It stands in 8° 0′ 30″ S, and 113° 23′ 30″ E.; and its summit is 6824 feet above the sea, while that of the Argopoera mountain, to the eastward, and the highest of the range, rises to 9843 feet according to Dr. F. Junghuhn.

194. Bezoekie flagstaff is in 7° 43′ 45″ S., and 113° 41′ 40″ E., *Bezoekie.* or 55′ E. from Sourabaya by chronometer. This town is the

capital of the Residency which comprises the eastern part of Java, and is much frequented by ships.

Mount Ringit. A vessel bound to this place from the westward may steer inshore near Bedoelang Point, so as to bring Mount Ringit to bear E. b. S., but not more to the eastward, on account of the shoal described in Art. 191. It is easily distinguished by its superior height, its vicinity to the coast, and by its rugged, rough, and barren aspect; it is an extinct volcano, and its summit stands in 7° 43′ 30″ S., and 113° 55′ E. When this mountain bears E. b. S., a hill named Tempora, to the westward of the town, will soon be discerned on the bearing of S.E., and then the conspicuous white coffee storehouses with red tiles of Bezoekie. In approaching the anchorage the water will shoal from 20 to 8 fathoms, and a broad sandy bank spreads out from the shore, steep-to, and projecting farthest from Katang Point, where there are but $1\frac{1}{2}$ fathoms or less. Abreast of Mount Tempora, in the western part of the road, some rocks and foul ground will be found. A mile to the eastward of Katang Point, there are 11 to 13 fathoms, and this depth will be carried as far as Poetie Point. The anchorage is N. b. W., or N.N.W. from the flagstaff. Mount Tempora W.S.W. $\frac{1}{2}$ W. about a mile from the shore, and in 9 or 10 fathoms water. In $7\frac{1}{2}$ fathoms, with Mount Tempora W. b. S., a ship would lie too near the bank and too close to the fishing stakes.

Panaroekan. 195. The flagstaff of Panaroekan is in 7° 43′ 30″ S., and 113° 57′ 25″ E., or 1° 10′ 45″ E. from Sourabaya by the chronometric observations of Lieuts. Rietveld and Boom in 1842. The town lies in a little bay at the foot of Mount Ringit. The western side of this bay is formed by a projecting point, on the extremity of which stands Pilarong Hill, and which, in one with Mount Ringit, bears S. b. W. $\frac{1}{4}$ W. This point is safe to approach, having 17 fathoms depth at half a mile distance. The eastern coast of the bight leads N.E. and N.E. b. E. to Cape Tyna, and is partly margined by a rocky reef, which begins 2 miles from Panaroekan, projects half a mile from the shore, and reaches as far as the river Gomok. This reef dries at low water in some places, but has 5 fathoms close to it, and 10 and 12 fathoms depth at a mile distant. Ships coming from the westward and bound to Panaroekan,

may stand in for the road, with Mount Ringit bearing south, and anchor in 17 to 15 fathoms water, on a mud bottom, full a mile from the shore; the flagstaff S. or S. ½ E., and Mount Ringit S.W. Without any risk, however, a good berth may be found farther in, at half a mile from the shore, in 8 fathoms, and offering a more convenient anchorage for taking in or discharging a cargo. H.N.M. schooner, Krokodil, under command of Lieut. Rietveld, touched here in 1842, and anchored half a mile off-shore in 8 fathoms, the flagstaff bearing S.S.E. ¼ E., Mount Ringit, S.W. b. W. ¾ W. Pilarong Hill, W. ¼ N., and the mouth of the river to the eastward of Panaroekan E.N.E. Good fresh water and beef are to be procured there; but fowls and other provisions are scarce. *Anchorage.*

196. Cape Tyna (also called China Point) is the northernmost point of the eastern part of Java, and is in 7° 38′ S., and 114° 5½′ E.; it is all low, so that from the westward the Sedano hills are seen high above it. According to Lieut. Elgenhuizen, there is a small sandbank just to the westward of Cape Tyna, upon which there are but 1½ and 2 fathoms at low water, and from which the Cape bears N.E. b. E., and Mount Ringit W. b. S. Capt. Fokkens, of the Dutch ship Elizabeth, found in 1836, when he entered the bight of Panaroekan, just to the westward of Cape Tyna, 14 fathoms, then 12, and at the next cast of the lead 5 fathoms. The anchor was let go immediately, when 4½ fathoms, hard sand, was found under the bows, and under the sternpost 12 fathoms, soft mud; the Cape bearing E.N.E. ½ E., 1 mile distant, and Mount Ringit S.W. ½ W.; and 2 miles from the land to the southward. Sounding with the boats, showed that this bank shoaled but slowly; but that between the ship and the shore, athwart the bay, there were 3½ fathoms, hard sand, at a mile off. No rocks were found, but the bank rose as suddenly as a wall from 13 and 12 fathoms, to 5, and less.* To avoid this *Cape Tyna.*

* This bank is mentioned in a work called the "Zeemans Gids naar en in Oost Indie, door G. Kuiper Hz.," &c. (a translation of Horsburgh) and called Fokkens Shoal. It was surveyed, in 1842, by H.N.M. schooner Krokodil, which found 4 fathoms upon it. The shoal, which is called in some charts Betsy Rock, is very probably one of the two mentioned dangers.

On the west side of Cape Tyna there is a large salt-water channel having no issue at the S.E. side, according to the natives, and affording very often a shelter to pirates.

danger it is advisable, when passing Cape Tyna at the west side, not to borrow too much towards the shore.

Kombang Bay. 197. To the eastward of Cape Tyna the coast runs about 8 miles to the southward, and forms Kombang Bay, in which are situated the campongs (*villages*) of Aggel, Kombang, and Tianker. This bay reaches to Tianker Point. This bight is not free from dangers, as Lieut. Elgenhuizen says that east from Tyna there is a sandbank a mile off, with 2 fathoms water, though 14 to 9 fathoms are close to it. He is said to have discovered, in 1824, another bank to the S.E., with 2 fathoms only at high water, called by him the Enora, after the vessel on which he was on board.

Enora Rock.

Hecate Shoal. 198. Horsburgh, in his East India Directory, mentions a dangerous shoal discovered, in 1812, by H.B.M. ship Hecate. Her boat found 2½ fathoms, rocks, and on some parts of it there appeared to be less water, and an appearance of breakers. Cape Tyna bore from it N.W. b. W.; Mount Ringit W.S.W.; the first point to the westward of Cape Sedano (Tianker Point) E. b. S., and Sedano Mount E.S.E. Inside of this shoal there are 13 fathoms water, 3 miles from the Java shore. When the shoal was first seen it bore W.N.W., and to avoid it a vessel should not come nearer than 17 or 18 fathoms, unless intending to pass between it and the shore. Lieutenants Rietveld and Boom examined these waters in 1842, to ascertain if these rocks existed, and found at some distance offshore, irregular soundings of 12 and 9 fathoms, but were not able to discover any other danger, except the rocky shelves which lie abreast of Tianker and Kombang, not projecting more than half a mile from the shore. This renders the existence of the shoal doubtful; and its position is still more so as the bearings given for the Hecate shoal do not meet in one point, nevertheless vessels should not enter the bight between Tyna and Tianker without necessity, and then with very great caution.

Anchorage in this Bight. 199. According to Lieut. Boom, there is a good anchorage in the eastern monsoon behind Tianker Point; H.N.M. schooner Krokodil anchored there in 9 fathoms water, with Sedano mountain bearing S.E., Tianker Point E.N.E. ¾ E., Mount Ringit W. ¼ N., and a conspicuous tree, called the Duivelsboom, S.W. ¼ S. In this part of the Isle of Java there are

several small rivers, but at high water their contents near the entrance are brackish. The westernmost gives the best fresh water, which falls there over some rocks situated above high-water mark.

Loemoet Point. 200. Between Tianker Point and the projecting point of Loemoet, 8 miles to the eastward, there is another bay, and the village of Tiottek, about a mile from the entrance of a river. The mouth of this river may be found by a very conspicuous dead tree with two branches on its eastern bank. The anchorage is in 9 or 10 fathoms, half a mile off-shore, the dead tree bearing S.E. b. S. or S.E., and Loemoet Point, or the east point of the bay, E. b. S., about 4 miles distant. The river affords good water, and is often visited by trading proas; but with a N.E. or E.N.E. wind the road is exposed to a high sea. A vessel intending to anchor near Tiottek, has to avoid the reefs near this village as they stretch off to the westward from Loemoet Point till abreast of the dead tree. They are all within a mile of the shore, and consist of four large reefs always above the water's edge, with some small rocks inside and amongst them. At 2 cables' lengths to the northward of these reefs there are 17 and 20 fathoms; and close to them 9 and 10 fathoms.*

Tiottek Bay.

Tiottek Reefs.

Cape Sedano. 201. Cape Sedano forms the north-easternmost point of the Isle of Java, in 7° 49′ S. and 114° 30′ 40″ E., or 1° 44′ E. from

* The reefs of Tiottek often afford shelter to the pirates, it being difficult to pursue them, and they find there fresh water in abundance. Lieut. Smits, D.R.N., says, in his valuable work, that there are passages for proas between each of the reefs, the three westernmost being the widest, and leading to the anchorages, viz. Gattal and Gollek, at which last there is a watering-place. At low water these reefs or ridges of rock are so high as to shelter any proas inside of them from shot. Close to the western reefs outside anchorage may be obtained in 17 or 20 fathoms. Tiottek River can be entered by boats only near the top of the tide, but good water may be procured there, as well as fire-wood and venison. Loemoet Point bears E.S.E. ¼ E. from Tianker Point, and has a broad reef projecting to the eastward forming the Laboean (harbour shelter?) of Loemoet, the entrance to which is so narrow that to see it a large rock must be brought in one with Mount Sedano on the bearing of S. ¾ E. Proas find anchorage also in an open road near Merak Point, and at Batak, behind a reef which lies parallel to the shore, and where they can be perceived only by vessels that are close in.

Sourabaya by chronometer. From Loemoet Point to the eastward the coast curves gradually from E.S.E. to S.E., without any conspicuous points, the whole being considered as Cape Sedano. The true cape is a bluff rocky projection which bears E.N.E. $\frac{1}{2}$ E. from the summit of Mount Sedano, and from which the coast runs more southerly. The perpendicular height of the mount above the sea is 4760 feet. Near the cape there is a reef, which stretches 2 or 3 cables' lengths off-shore, and inside of which frequently proas are anchored. The depth along this coast is considerable, being in some places 50 and 60 fathoms, no bottom. Mount Sedano is high and rugged, and from different points of view has a different appearance, showing sometimes a flat table top, and sometimes separate summits.

Meinders Droogte. First Patch.

202. Meinders Droogte in 7° 41′ 15″ S., and 114° 29′ 30″ E., was surveyed, in 1824, by Lieut. Elgenhuizen, D.C.N., and, in 1842, by Lieuts. Rietveld and Boom, D R.N., whose reports are as follows:—"It lies north nearly 6 miles from the north-eastern coast of Java, and consists of coral, part of which is always above the level of the sea. This dry part stretches N.W. and S.E. about a mile; it is very narrow, and resembles at some distance the trunk of a fallen tree. It may be seen at low water from the deck of a ship 3 or 4 miles, and from the mast head 5 or 6 miles. On its eastern side this reef is steep-to, but from its S.W. side spreads a mile under water, consisting of large detached rocks, carrying 3 fathoms water, while there are 50 fathoms close to them. The dry ridge bears N.N.E. from Mount Sedano, E. $\frac{1}{4}$ N. from Mount Ringit, N. $\frac{3}{4}$ W. from the N.E. point of Java, and N.N.E. $\frac{1}{3}$ E. from Mount Idjing. The summit of this last mount is visible from the reef when just open to the westward of the western summit of Mount Sedano.

Second Patch.

About a mile W.N.W. $\frac{1}{4}$ W. from the above reef there is another patch of half a mile in extent, with 2 fathoms water in the shoalest place, and no bottom with 25 fathoms between them.

Three other Patches.

203. Lieut. Rietveld discovered three other reefs bearing W. b. N. and W.S.W. $\frac{1}{2}$ W., besides the last-mentioned, at the distance of 1 and 2 miles from the dry part of Meinders

Droogte, but with not less than 7 fathoms in the shoalest place, and then 8, 10, and 15 fathoms. To the southward of them he had 50 and 58 fathoms. By his report, Meinders Droogte may be approached safely on its eastern side, but from the S.W., W., and N.W., it should be kept at 2 miles distance at least.

CHAPTER VIII.

BALY STRAIT.

204. THE Strait of Baly, which separates Baly Island from Java is about 16 leagues long ; and at its southern entrance 9 leagues wide, though only a mile and a half across near its northern end. Lieut. Smits, in his Guide, says that this strait is preferable to all the other passages between the islands eastward of Java, because there is anchorage on both sides of the narrows, if it should not be passed in a single tide.

The northern entrance of the Strait from Cape Sedano is 6 leagues south; but before we enter it we must describe Gilboan Island, and some rocks near the shore of Java, from the surveys of Lieuts. Rietveld and Boom in 1842, in H.N.M. schooner Krokodil.

Gilboan Island. 205. Gilboan, or Duiven Island, is in 8° 2′ S., and 114° 31′ 15″ E., it is small and steep, and lies about 4 miles from the coast of Baly, and 2 miles from Java; it is surrounded by a broad coral reef, which projects farthest S.E. and N., and but little to the westward.

Krokodil Rock. 206. Krokodil Rock bears S.E. ½ S. from Mount Sedano; N.E. b. E. ½ E. from Mount Idjing, and south from the north-easternmost visible point of Java. From Gilboan Island it lies about north 5 miles, and about 2½ miles from the nearest Java shore. It carries 2 fathoms water, and may be detected by its light-green colour. According to a Banjoewangie pilot, communicated to Capt. Fokkens in 1836, this Two Fathoms Bank lies S. b. E. from Cape Sedano, N. b. E. ½ E. from the middle of Gilboan, and 3 miles from the Java shore ; and he asserted that there were five rocks, close to each other, on the points of which there was but 1 fathom of water. Lieut. Rietveld, however, could discover no dangers to the eastward of the Krokodil Rock, although he made a long cruise in those waters, and verified the above bearings. Other persons, well acquainted with this part of the Java and Baly seas, have

affirmed that there are no other dangers; nevertheless navigators are recommended not to bring Gilboan Island to the southward of S.S.W. ½ W., nor the north-easternmost visible point of Java to the northward of N.N.W., by which precaution they will pass to the eastward of all these rocks.

Dangers between Gilboan Island and Java.

207. In the passage between Gilboan Island and the coast of Java, the Krokodil found 20 and 40 fathoms, but as there are several rocks and reefs near the shore, this channel is not recommended. Near Menang Point, for instance abreast of Gilboan, a reef projects about 4 cables' lengths; and from thence to the northward, and again, in the bight of Banjoematti, there are some reefs, with 5 fathoms water, and perhaps less, which may be readily distinguished by the light green colour of the water. About a mile to the southward of Tyandibang Point, which bounds the Bay of Banioematti, lies a large coral reef, but it shows itself a little above the water's edge. Lieut. Rietveld found in this bay, 30, 20, and 16 fathoms water, but disapproves of anchoring there, because there is no shelter from a S.W. wind.

And from hence to Cape Sedano.

208. Between Tyandibang Point and Cape Sedano there are some reefs, but all close to the Java shore, and all visible above water but one, about a mile off-shore, with only half a fathom depth on it, and a pass inside of it for proas. This reef lies E. b. S. from Mount Sedano; but few of these rocks can be called direct dangers to ships bound to Baly Strait, as they can very seldom have any business so near the shore as to be entangled by them.*

Minjangan Island.

209. Minjangan, or Herten Island, lies very near the shore of Baly, and about 5 miles distant from the entrance of the Strait; it is surrounded by a coral reef, mixed with sand, which projects a considerable distance from the western side, partly above water, and at low water all dry. Between the island and Baly there is a small channel with 15 to 6 fathoms water, encumbered by a 3 fathoms reef near the Baly shore. South-eastward of Minjangan lies St. Nicolas Bay, at the entrance of which 90 fathoms line will not reach the bottom;

* These in-shore reefs form little creeks with anchorages, which are often frequented by pirates, who lie concealed there to catch some unsuspecting stranger, and are sometimes congregated in considerable numbers, well armed and enterprising, so that all sorts of ships should be on their guard.

inside, 70 and 60 fathoms may be found, and therefore no anchorage; besides which some dangerous reefs lie in the inner part of the bay, near a small bight called Banjoewedan.

Baly Coast east of St. Nicolas Bay.

210. To the eastward of St. Nicolas Bay, as far as the hills of Sandan and Goondol, the coast of Baly is fringed with reefs, which project to the unequal distances of half and of $1\frac{1}{2}$ miles off shore, and 4 miles off no bottom will be found with 90 fathoms.

Cape Passier.

211. At Cape Passier, or the N.W. point of Baly, the Strait of Baly commences, and is fronted by a reef, projecting half a mile. This is the narrowest part of the Strait, being only $1\frac{1}{2}$ miles wide near the Baly shore, and to the southward of Passier reef it is very deep. The best channel for large ships is along the Java shore; the more so as anchorage may be found in the Bay of Manna, about 2 miles to the entrance of the Strait, in 18 to 10 fathoms water, and out of the current; an eddy even is felt there. Between Manna Bay and Banjoewangie there are other anchorages near the Java shore, and it is said also in Gillimanok Bay on the Baly side.*

Manna Bay.

Banjoewangie.

212. The flagstaff of Fort Utrecht, at Banjoewangie, stands in 8° 14′ S., and 114° 25′ 50″ E. by chronometer.† The bay is on the Java shore, near the southern extremity of the narrowest part of the strait, and affords good anchorage in 12 or 13 fathoms, the flagstaff bearing west, and half a mile from the shore. In touching at this place care is requisite on account of the dangerous Deptford Rocks, and others in the passage as well as on both sides. These rocks being very dangerous, in 1839

Deptford Rocks.

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* Lieut. Smits says that the entrance of Gillimanok is only a ship's length wide, and that inside there are three islands surrounded by a bank of mud, to the southward of which there are 9 fathoms, and 4 fathoms to the northward as well as in the entrance. Inside of the islands there are but 2 fathoms, and in a small bight a little fresh water may be had. The tide rises from 8 to 10 feet

† Assuming Sourabaya to be in longitude 112° 46′ 40″ E., that of Banjoewangie will be determined as follows:

			°	′	″
By Lieut. Van der Does	- 1841		114	25	52 E.
„ Stoll, D.R.N.	- 1841		114	24	46
„ Eschauzier, D.R.N.	1841		114	26	15
„ Rietveld, Boom	D.R.N. - 1842		114	25	16
„ Gevers, D.R.N. -	—		114	27	00
Mean Result	-	-	114	25	50

and 1840 three iron buoys were placed upon them; but being sometimes washed away by the sea, their presence is not always certain. In 1842 these waters and dangers were surveyed by Lieuts. Rietveld and Boom of the Dutch Royal Navy, who give the following description of them:—

213. 1. The Deptford Rocks, upon which the British ship Deptford struck in 1795, consist of separate patches, with irregular depths between them, and stretching N.N.E. and S.S.W. Upon the north-eastern rock, where there are but 6 feet at low water, a buoy lies on the following bearings:—the flagstaff* in Fort Utrecht, S.W. b. S., Pakkem Point in one with the western foot of Mount Ikan S. $\frac{1}{2}$ E., a high and remarkable tree N. $\frac{3}{8}$ W., and the southern buoy S. b. W. Upon the southern rock there also lies a buoy in 12 feet on the following bearings: Fort Utrecht flagstaff S.W.; Pakkem Point South; the summit of Mount Idjing N.W. $\frac{1}{4}$ N., and the above-mentioned High tree, N. $\frac{3}{8}$ E. Between the buoys which bear N. b. E. and S. b. W. from each other, there are 3, 4, and 6 fathoms rocky ground; and to the westward, between them and the shore, there is a channel, but fit only for small vessels and proas. To the eastward of them Pakkem Point is just open to the westward of the foot of Mount Ikan, and to the southward of them there are 8, 9, and 10 fathoms water.

2. Groot Rock, which lies to the southward, and a little farther out than the Deptford Rocks, is very small, but has not more than 2 fathoms on it. There is a buoy upon this rock also, from which the flagstaff in Fort Utrecht bears W.N.W. in one with the building on the pier; the High tree N., Mount Idjing N.W. $\frac{1}{3}$ N.; Pakkem Point S. $\frac{3}{8}$ W., and Mount Ikan S. $\frac{1}{4}$ E. *Groot Rock.*

3. The Kaiman Rock lies between the Deptford and Groot Rocks, but more in-shore. Upon it there are 2 fathoms at low water, between it and Groot Rock 13 fathoms, and between it and the shore 9 fathoms. Fort Utrecht bears W. b. N., the High tree N. $\frac{1}{2}$ E., and Pakkem Point S. $\frac{1}{4}$ W. *Kaiman Rock.*

* This flagstaff stands in Fort Utrecht, but the other one, mentioned in Art. 212, has been erected to the south-eastward, outside the Fort, upon a hill of tolerable height, which makes it visible above the cocoa-nut trees. The buoys on Deptford Rocks were not yet laid down when those bearings were taken.

Kameleon Rock. 4. The Kameleon Rock, surveyed by Lieut. J. Van Ommen, D.R.N., in 1846, is not above 25 fathoms in extent, carries at low water 3 fathoms, and is immediately surrounded by 5 and 8, which suddenly deepen to 12 and 19 fathoms. The S. buoy of the Deptford Rocks bears from it W. $\frac{1}{2}$ S., the High Tree N. $\frac{3}{4}$ W., and the flagstaff in Fort Utrecht S.W. b. W. $\frac{3}{4}$ W.

Banjoewangie Road. 214. To avoid these dangers, a ship coming from the northward to Banjoewangie Road should, after passing the high tree, keep Mount Ikan well open to the eastward of Pakkem Point, and not borrow towards the shore in less than 15 fathoms before Fort Utrecht bears west. From thence steer for the fort, allowing for the current, which however is not very strong near the shore and occasionally runs the contrary way; the mark for this course is to keep the building on the pier just south, and outside of the fort. The pilots, with a leading wind, come mid-channel between the Kameleon and the Deptford Rocks into the Road. Throughout the western monsoon a good anchorage will be found in 12 to 10 fathoms depth, with the flagstaff near the fort bearing west, and at a sufficient distance south of the southernmost buoy on the Deptford Rocks.

215. Lieut. Smits says in his Guide that "The three buoys are made of iron, and are all painted red and white, and that their mooring chains are frequently broken by the heavy swell; that the road is limited by these buoys; that ships should moor N. and S.; that during the eastern monsoon the S. and S.E. winds blow very strongly in the afternoon, and sometimes in the morning, which causes a heavy surf on the beach through which only very small proas can pass; that nevertheless vessels ship their cargoes without trouble; and that the water is very good but the surf high, and that boats can enter the river and fill but once in the day, and frequently have to remain in the river all night." He adds, that from the pier-head Mount Idjing bears N.W. $\frac{3}{4}$ N. and Mount Ikan S. $\frac{1}{4}$ E.

Pakkem Reef. Ships bound to the road coming from the southward, or those leaving the road and bound to the southward, should pass Pakkem Point at such distance as to clear a reef that projects from that point, with 9 and 10 fathoms along its outer edge, but increasing speedily to 20 fathoms.

216. Two miles S.E. b. E. from Pakkem Point there is another patch of coral, but with not less than 6 fathoms, and therefore not dangerous to passing vessels. In 1843 the Dutch ship Bato, while working to the southward, discovered a rocky shoal with from 6 to 7 fathoms off Pakkem Point, and anchored on the following bearings: the flagstaff N.N.W. $\frac{1}{2}$ W., the middle of the village S. of Pakkem Point S.W. b. W. $\frac{1}{4}$ W., Mount Ikan S. $\frac{1}{2}$ W., the northernmost peak of Baly, opposite Banjoewangie N.E. $\frac{3}{4}$ E., the N.W. point of Baly N. b. E., Mount Idjing N.W. $\frac{3}{4}$ N.,* the southernmost hill of Java W.N.W., and Pakkem Point N.W. b. N. 2 miles. It was then half-ebb, and boats were sent to sound in several directions, but the least water found was 6 fathoms; at three ships' lengths off 11 fathoms; and between her and the nearest part of the shore 15 fathoms. The Dutch ship Elmina examined the same shoal and with the same results, and therefore to clear it Mount Ikan should not be brought to the southward of S. b. W., nor the High Tree to the eastward of the middle of Mount Sedano. *Pakkem Shoals.*

217. In the western monsoon frequent calms and variable S. and S.S.W. winds will be experienced in Banjoewangie Road; and as there is no sea at that season, the communication with the shore is uninterrupted, and the proas with water or cargo freely approach and board the vessels. In the eastern monsoon, when S. and S.E. winds blow with considerable force along these shores, there is usually a heavy surf upon the beach, and sometimes the pier cannot be approached for several days. It is very troublesome to get fresh water at those times, the river being only navigable at high water; when the surf is highest the boats are often compelled to remain on shore all night. The mouth of the river has changed considerably, it having been some years ago close to the pier. The water is excellent, and fresh provisions are procured there in abundance, and at moderate prices. The variation of the needle was, in 1842, 0° 30′ E. *Water. Provisions. Variation.*

218. At Banjoewangie a government pilot is kept to bring vessels from Gilboan Island into the roadstead, and from thence to abreast of Mount Ikan. If coming from Sourabaya, or one *Pilots.*

* Mount Idjing is the highest hill in Java, being 10,050 feet above the sea.

of the other ports on the N.E. coast, and bound through Baly Strait, they usually write to Banjoewangie with information of the day of their departure, by which the pilot regulates himself in waiting for the ship outside the strait. In this case the pilot proa will be commonly found under the Java shore, near the reef, abreast of Gilboan Island ; but when no such intelligence has been sent the pilot is seldom outside the strait, especially in the east monsoon. But in most instances the pilot will appear speedily when called for by the common signal, hoisting the flag and firing a gun. When coming from the southward, and not intending to touch at Banjoewangie, it is advisable when the pilot is required to make the signal in good time.

Ikan Point. 219. The point of Mount Ikan, about 16 miles south of Banjoewangie, in 8° 28′ S., is the termination of a projecting land-

Pampang Bight. tongue, which with the Java shore forms the bight of Pampang, where vessels will find a convenient anchorage at all seasons, and where it is probable that water and wood may be procured. Lieut. Rietveld visited this Bay in 1842, in H.N.M. schooner Krokodil, and found outside and inside 9 and 10 fathoms sand. She anchored on the following bearings:—Ikan Point E.N.E. $\frac{3}{4}$E., the summit of Mount Ikan E. $\frac{3}{4}$ S., and the outermost point of Java N. $\frac{1}{4}$ W. It was afterwards examined by the officers of H.N.M. steamer Vesuvius, who found good anchorage under the eastern shore for 3 miles from the entrance, and from half a mile to a mile in breadth, the depth decreasing gradually from 10 to 3 fathoms, sand and coral. Along this shore there is a bank of mud and coral which dries at low water, and the western side, as well as the head of the bay, have broad muddy flats.

The outer or eastern side of the long land-tongue Ikan runs to the S.S.E. and S.E., with some projecting points, as far as the eastern point of Java, which consists of low land. These projecting points are rounded by a coral reef of a mile in breadth, upon which the sea breaks heavily ; close to this reef will be found 30 and 50 fathoms, and toward the middle of the Strait there is no bottom with 100 fathoms of line, except on one small bank which was marked on the old charts, but considered doubtful. It was, however, again found in 1843, by Captain Kaleshock, of the Princess Van Oranje, and consists of black sand, rocks, and shells, and about a mile in extent. It was

very steep in approaching it from the northward, as he shoaled from 24 to 5 fathoms in five casts of the lead, when he let go his anchor, with all sail standing on the following bearings :— Mount Ikan N.W. b. W. ½ W., and the outer point of Java S. b. W. ½ W. Next morning he found nowhere else on the bank less than 6 fathoms, and it appears probable that it is much less than a mile in breadth.

Cape Slokko.

220. Cape Slokko, or the eastern extremity of Java, lies in 8° 42′ S. and 114° 39′ E., then comes the point called the South-east Hoek, and then the south point of Java in 8° 47′ S., and 114° 30′ 30″ E.

Tafel Hoek.

In the southern part of the strait the coast of Baly forms a long projecting point, generally called the Tafel Hoek. The western extremity of this table tongue is named Boekit Point, and lies in 8° 52′ 30″ S. and 115° 6′ 30″ E.

Baly Badong Bay.

221. Baly Badong, the bay formed by the above Tafel Hoek, is about 8 miles across, and on its north shore stands the village of Kotta, where, in 1844, there was an establishment of the Dutch *Handelmaatschappy.**

In the eastern monsoon this bay affords tolerably good shelter, but sometimes a high sea impedes the trans-shipment of cargo, and prevents boats from landing.

222. Since the first Dutch edition of this work was published, more accurate information has been obtained about this bay. Lieut. Smits, in his useful Guide, says, "The high Toeban tree will be seen, when coming from the westward, long before the low land, and soon afterwards a small whitewashed house, as well as the flagstaff, off which there is a reef parallel to the shore, with heavy breakers projecting a long way out. The anchorage to the southward of this reef is unsafe, from the heavy swell that rolls in round the Tafel Hoek ; it is also too far from the village of Kotta, and landing on the beach there is dangerous. To the westward of the reef there are 12 and 15 fathoms, and close to its edge 6 and 7. There is also a bar W. ½ N. from the flagstaff, carrying 2¾ fathoms, according to Lieut. Van Gogh's chart ; but Capt. Makenzie says that there is on it only 1¾ fathoms at low spring tides ; and between the bar and the reef there is a 3-fathoms passage which is much

* Mercantile Company.

used. The bar greatly diminishes the swell, and this anchorage is not unsafe, though the vessel appears to lie with breakers all round. Sometimes, however, vessels near the bar are obliged to slip from their anchors and to take refuge to the northward of the bar, where no breakers come. H.N.M. schooner Krokodil anchored here in 6 fathoms, with the flagstaff, E.S.E., the N.W. point of the bay N.W. $\frac{3}{4}$ W., and another point S. $\frac{1}{2}$ W. A berth, however, near the shore would be safer, and there should not be less chain cable out than from 40 to 60 fathoms, on account of the great height of the swell. There will be no danger of fouling the anchor, as the land breeze is always fresh from the S.E., and the N.W. winds have little strength. By keeping the high tree (to the northward of the Castle) between the bearings of E.S.E. and S.E. b. E. a vessel may work in as far as $5\frac{1}{2}$ fathoms, but a stranger should anchor in from 8 to 10 fathoms, with the flagstaff S.E. b. S., and send for a pilot. Boats may steer to the shore half-way between the high tree and the flagstaff, and proceed between the breakers and the reef, and let go a grapnel opposite the flagstaff. The

Water. watering-place is near the flagstaff. Rice and other supplies may be had in abundance, besides cattle and poultry.

Tides. 223. At full and change it is high water at 11h. 0m., and the rise is 9 or 10 feet.

Rice. 224. The export of rice to China and Singapore is considerable.

Panti-Timor Bay. 225. In the western monsoon the bay of Baly Badong is a dead lee-shore, and ships generally then resort to the eastern side of the Tafel Hoek, and anchor in the little bay called Panti-Timor, which signifies eastern harbour, in opposition to Panti-Barat, or western harbour, the name given by the natives to Baly Badong. There is so little room in this bay, that three or four ships only, of 200 or 300 tons burthen, may lie here together; and they must moor along the beach in 10 fathoms depth, with two anchors in the offing. The way into this bay

Serangan Island. leads along the south side of the small island, Serangan, from which, as well as from all the points in this bay, dangerous reefs project, making the channel much too intricate to enter

Toeban. without the pilot, who will come from the village of Toeban, in this bay, on making the common pilot signal; and while waiting

Banjowa Point. for him vessels should anchor in 9 or 10 fathoms east of Banjowa Point. Square-rigged vessels must warp into this port; which,

says Lieut. Smits, is unfit for anything larger than schooners. Upon the reef of Serangan Island, the Dutch ship Overyssel was totally wrecked in 1841.

226. Baly Peak is 11,320 English feet high, and visible in clear weather from 20 to 30 leagues; its summit is in 8° 19′ S., and 115° 32′ E. *Baly Peak.*

227. The rest of the coasts of Baly, and of the great chain of islands which stretches away to the eastward, are well described by that skilful officer, Lieut. Smits, in his Guide and Chart, which were lately published at Batavia.* We must return to our circuit of Java, after giving a brief account of the winds and currents which prevail in Baly Strait, in the different monsoons, and which, therefore, must regulate the conduct of all persons that venture to proceed through it without a pilot.

To help the seaman to proceed through Baly Strait in the eastern monsoon, when coming from the northward, Lieuts. Rietveld and Boom, who were cruising here for a considerable time in the year 1842, in that monsoon, give the following directions, after premising that, during this monsoon, S.E., E., and E.N.E. winds prevail along the N.E. coast of Java as far as Cape Sedano, in the day; and in the night, brisk, and sometimes strong S.S.W. land winds; but, in the afternoon, variable breezes and calms. From August to November the sea-winds to the westward of Cape Sedano are more northerly, and vary between N. and N.E., and N. and N.W. *In E. monsoon from the N. through Baly Strait.*

228. To the eastward of Cape Sedano, or when the Strait is open, the prevailing winds are in this season S.S.W. and S.W., and so strong from July to November that sometimes they require several reefs in the topsails. In advancing from Sedano, a change of wind often happens suddenly, as the strait comes open; but when past the entrance and toward the Baly shore, the wind will not be so strong, and very near Baly often calm. The limit between these S.E. and S.W. winds seems to be abreast of Mount Goendol (a hill on the north coast of Baly, about 7 leagues to the eastward of the entrance of the strait), and therefore variable baffling winds and calms will be always found near that place. Ships coming from the Strait of Madura,

* Lieut. Smits' Guide is given as a sequel to the Baron's, and will be found in Arts. 316—519.

and bound to Baly Strait, should beat up to Cape Sedano, between the Java shore and the Meinders Droogte, and then run over toward the Baly shore, as the wind changes to S.W. or S.S.W.; they will fetch that coast between Minjangan Island and Mount Goendol (according as the current is setting in or out), and once near the Baly shore, it will be no difficult task to work up there. At night, or with a contrary tide, it is best to stand off and on, and with reduced sail. The northerly current will keep a ship free from the shore, and in the night the following remarks may be of some utility. Minjangan Island should not be brought to bear to the eastward of S.S.E., in order to avoid being set upon Gilboan Island; nor Mount Idjing to the northward of west, to avoid the Baly shore. When the tide is shifting, and the current sets to the southward, into Baly Strait, run over towards Gilboan, and beat up with short tacks between it and Minjangan.

Tides. 229. During the ebb-tide, or while the water is falling, the stream sets along the north-east coast of Java to the eastward, and into Baly Strait to the southward. At full and change it is high water about noon, or 1 P.M. The tides are then pretty regular, but at the quarter moons, and especially the last quarter, they are very irregular. The tide slackens and shifts first on the Java side, the stream continuing to run for $1\frac{3}{4}$ or 2 hours longer along the Baly shore; at quarter moon the flood-tide sets only to the northward as far as the narrows of the strait, on the Java side.* The violent S.W. and S.S.W. winds which prevail in the eastern monsoon occasion strong ripples, and sometimes a boiling and breaking of the waves in the middle of the strait, and on the Baly side, when the current sets to the southward, so that a ship is whirled about and sometimes very difficult to work. These ripples are not so strong or frequent near the Java shore, for which reason it is advisable to keep it aboard, if possible, in working in or out

* Our knowledge of the tides in this strait is very imperfect. According to the Banjoewangie pilot the stream runs to the northward, and the water rises from the time of the moon's rising till she passes the meridian, when the stream runs to the southward and the water falls. With the western monsoon, however, he says all this takes place an hour and a half in advance of the moon's reaching the meridian, and in the eastern monsoon about the same interval after she has passed it. If these assertions be correct, a knowledge of them may be very serviceable to vessels beating either way.

the strait, and the more as a reef projects from Cape Passier, while the Java shore is clear of danger from abreast of Gilboan to the rocks in Banjoewangie Road. To avoid a strong contrary current a ship may anchor close in with the Java shore, or in the bight of Manna, in 18, 12, and 10 fathoms water. Between this bight also and Banjoewangie anchorage ground may be found very near the shore, but it is sometimes difficult to reach these anchorages with faint breezes. To the southward of Banjoewangie the strait becomes wider, and there the track which gives most southing will be the best, taking care to give a sufficient berth to the reef of Pakkem Point, which projects 3 miles off. The depths, too, increase in advancing to the southward, so that vessels are often driven back by adverse currents for want of anchoring ground. Besides all this, the prevalent S. and S.E. winds throughout this season raise such a swell that anchorages, such as off Ikan Point and Banjoebiroe, which would be available in other parts on the Java shores, are here to be considered unsafe. Some caution is even required when approaching this coast, not to be driven upon it by the current in calms, especially as reefs project from it in several places, as at the S.E. and E. points of Java, and at Keboon to the distance of a mile. It is usual to keep on the Java side of the strait till near the S.E. point, and then cross over towards the Baly shore, where vessels can best make good their southing, and where, if necessary, they can run into Badong Bay, which offers a good anchorage in this monsoon, and await there a fit opportunity for getting out of the strait. Without a steady breeze it is not advisable to work out, because the north and north-west currents sometimes force a ship back, when it may be difficult to regain the former anchorage in Baly Badong Bay.

In W. monsoon from the N. through the Strait.

230. To take the Strait of Baly in the western monsoon from the northward, when faint southerly breezes prevail in the forenoon, and at noon N. and N.N.W. unsteady winds and calms, the sea being about this time without any considerable swell, pass Gilboan Island, Cape Passier, and Pakkem Point, with the caution due to the dangers near them, as already described, and then remain under the Java shore, in the southern part of the strait, where you will have the advantage of an off-shore wind, besides opportunities of anchoring, if required, at

the entrance of Pampang Bay. The dangers of the south-east coast of Java must not be forgotten, nor that heavy squalls from the N. and N.W. and also from the S.W. will be encountered in this season. On the whole, however, a ship will advance quicker to the southward in this than in the eastern monsoon.

In E. monsoon from the S. through the Strait.

The eastern monsoon lasts from March to September or October, and during that period S., S.W., and S.S.W. winds prevail to the northward of the S.E. trade, which from July to September blows with considerable force. The currents are led by the winds, although it has been asserted that, in the immediate vicinity of the strait, they run in a contrary direction to the monsoon, consequently in the eastern monsoon to the eastward, and the contrary. When losing the S.E. trade, the general rule for taking Baly Strait is to be on its meridian in longitude 114½° E., and then steer direct for it. The S.E. extremity of Java consists of very low land, which at some distance and in hazy weather has the appearance of an island, and the south point of Baly has the same aspect, but is more elevated. In this eastern monsoon the sky is almost always hazy, and the Peak of Baly can very seldom be seen, so that an eastern error in a vessel's longitude would easily lead her to mistake the interval between the Tafel Hoek and Pandita Island for the southern entrance of Baly Strait.* After making the S.E. point of Java, Mount Ikan will rise in the N.W. as an island, and from thence a N.W. or N.N.W. course will lead abreast of Banjoewangie. If bound there, bring the flagstaff of the fort to bear W., and then steer right into the bay on that course, but not farther in than into 12 fathoms, on account of the steepness of the Deptford and other rocks. From Banjoewangie the course is about north, through the narrow part of the strait, keeping at a prudent distance from the reef of Cape Passier, and from abreast of this point N. or N. ½ E., along the east side of Gilboan Island to Cape Sedano.

In W. monsoon from the S. through the Strait.

231. During the western monsoon, that is to say from October or November to March, generally westerly winds, and E. and S.E. currents are found between the S.E. trade wind and

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* This took place with the Dutch ship Overyssel.

Baly Strait. A ship at that time leaving the trade wind ought therefore to keep more to the northward than in the other monsoon, and should fall in with the land a little to the westward of the strait. She must take care, however, of the reefs of Java, and try to get northing on the best tack, when the wind shifts to the N. or N.N.W., which is frequently the case. The smoothness of the water in this monsoon renders the task of working through the strait easy and speedy.

CHAPTER IX.

South Coast of Java from Baly Strait to Sunda Strait.

General appearance of the south coast.

232. Unlike the north coast of Java, which in most places presents a low front to the sea, with regular soundings along the coast, and almost everywhere anchoring ground, the south coast of the island is generally high, consisting of steep rocks and rugged points, covered always with foam and breakers, and the whole shore wearing a barren and desolate appearance. In general, great depths will be found in the immediate vicinity of the coast, and although in some places a less forbidding beach and a less depth of water may be found, yet they very seldom afford a fit spot for the anchor, as a terrific swell, especially in the S.E. monsoon, lashes with unceasing fury its headlands, or, supported by the full force of the ocean, rolls into its ports and havens. Notwithstanding this, the south coast of Java is not altogether destitute of places of shelter, for there are a few bays and harbours which afford, under every circumstance, a safe retreat. They have, indeed, but recently been made known by the surveys of some eminent officers of H.N.M. navy, but they shall all be described in their respective places.

Mountains.

233. From the small extent in latitude of Java, and the consequent nearness of its north and south coasts, the mountains serve as leading marks equally on either side of the island. Throughout the western monsoon some of these mountains may be discerned at the distance of 15 to 25 leagues, but in the eastern monsoon they are generally concealed by a hazy sky, and therefore not distinguishable till very near. The situation and height of these mountains have been already described in the former chapters.

Monsoons on the south coast of Java.

234. In general along the south coast, the monsoons shift about the middle of April and of November, but this rule is sometimes subject to remarkable deviations. Lieut. Rietveld, who was employed in the year 1839 in making observations at

Tylatiap, says with regard to the monsoons :—" The S.E. and easterly winds set in about medio April, and blew without interruption till medio November, when the westerly winds began, but partially only, for till late in December the former, accompanied by rain, continued to blow about noon. Generally a gentle land breeze came off till 8 or 9 o'clock A.M., after which a calm ensued till about 11 in both the eastern and western monsoons, except from medio July till in the beginning of October, when frequent easterly winds and heavy rains prevailed, particularly in August and September, when bad weather, long gales, and sometimes storms from the eastward with heavy rains, were experienced, and not the least westerly winds."

235. He adds, " The arriving ships encountered in the eastern monsoon, when near the shore, from the S.E. point to Tylatiap, a constant easterly current, which set them to the eastward 10 or 12 miles in the 24 hours ; and the other vessels, which worked towards Tylatiap in this monsoon, in the month of July, coming from Sunda Strait, also met with a current to the eastward of 3 to 6 miles in the same period."* *Currents.*

236. Lieut. Eschauzier also observed an easterly current against the monsoon in the latter part of September, 1841, in the schooner Wasp. To the southward of Baly Strait, and near the coast of Java, faint S.E. breezes and calms everywhere prevailed, and the eastern current so strong as to ripple. When steering S.W. to get away from the land he soon found a reefed topsail breeze from the S.E., and the strength of the current gradually abated the more he advanced to the S.W. and westward. Near the coast a faint land breeze was generally experienced in the forenoon, and from Baly to Sunda Strait the passage was made in 12 days. The Dutch ship Elizabeth, Capt. Fokkens, having cleared Princes Strait, July 11, 1839, immediately met with a S.E. wind and a current running to the W.S.W. It was rather troublesome to beat against them along the shore, so that it cost him three days to weather

* Lieut. M. H. Jansen, D.R.N., says, that Captain Curtis, of the Dutch Indian barque Kalie-maas, who had great experience in those waters, asserted that, in the eastern monsoon, the current sets to the westward from the full to the change, and either to the eastward from the change, or that there was no current. Throughout the western monsoon the set is to the westward, between the parallels of 10° and 13° S., but varying near the shore.

Currents.

Palembang Point, or Cape Sangian Sira; but as soon as he was round this point, he found that the current had shifted, and was then setting him to the S.E. The ship had remained close in-shore during all this passage, standing not farther off than 12 or 14 miles at night, and during the day only 2 miles. The land-wind seemed to blow only from the high land, as from Wynkoops Point (Cape Anjol) till past 108° E., and during the night there were heavy squalls from N. b. W. and N.N.W. Farther to the eastward this was not the case, and near Kambangan Island the steady eastern monsoon arrived, the wind all day and night blowing unabatingly a reefed topsail breeze from E.S.E. and S.E., accompanied by a high sea. He kept close in-shore, and found by observations that the current ran steadily to the south-eastward against the monsoon, at the average rate of two-thirds of a mile per hour. H.N.M. brig Koerrier, Capt. G. Willinck, in June, 1841, bound to Tylatiap from Sunda Strait, did not feel this current, but on the contrary, a considerable set to the westward, sometimes 19 miles in 24 hours. Near the shore this current was strongest, and the land breeze was scarcely felt.

237. The Dutch ship, Anna Gertruida, Capt. Boulet, going to Tylatiap from Sunda Strait in the beginning of October, experienced strong E.S.E. and S.E. winds, with rough and squally weather, particularly during the night, accompanied by thunder and lightning. In 9 days, not being advanced more than 8 leagues S.W. from Wynkoops Point, he resolved to try his luck to the southward. Near Christmas Island the wind veered to S.E. b. S., and he expected to reach Noesa Kambangan* on the other tack, but as he approached Java, so did the wind return to its former quarter, with similar weather, and a western current, all which prevented her reaching Tylatiap till 36 days after leaving the Strait. This captain recommends vessels in such circumstances, on leaving the Strait of Sunda, to stand to the southward into 20° S., so as to bring the island of Kambangan to bear north before making for the land.

It would seem that vessels bound to any port on the south coast of Java, from the westward, should lay their heads on

* Noesa signifies island. The *oe* is pronounced like *ou* in the English word soup.

that tack which gives most easting; and that those which have beaten up near the shore have generally made the quickest passage.

238. During the strength of the western monsoon, some vessels have made speedy passages from Baly Strait to Tylatiap in ten or twelve days, by standing to the southward as far as 17° S., in order to gain the S.E. trade-wind; then running to the westward, past the meridian of Kambangan Island, till they could fetch their port. *The West monsoon.* *Currents.*

H.N.M. corvette Pollux, Capt. Eeg, February 6, 1827, left Baly Strait, and found outside strong W. and S.W. winds, with a current to the S.E. On standing to the southward till out of sight of the land, the current changed to S.S.E. and S., but decreasing in force till between 11° and 15° S., and in 115° E. no current was perceptible. Contrary to the general expectation, in 15° S., there was no trade-wind, but the current began to run to the westward, and increasing in strength till south of Sunda Strait, where it amounted to 42 miles in 24 hours. This ship had 20 days' passage from outside Baly Strait to the entrance to the Strait of Sunda.

Horsburgh mentions an instance of a British ship, which, in December, 1771, being bound from the southward to Sunda Strait, and not considering which monsoon was blowing, made the south coast of Java 5 degrees to the eastward of Java head. Not being able to beat up against the strong westerly wind and easterly current, she was compelled to run to the southward to pick up the S.E. trade-wind, and to make sufficient westing there to fetch into the strait, which she effected, but not till six weeks after falling in with the land of Java. Several fast-sailing ships, however, have made a quick passage by beating up along the south coast of Java.

The Dutch ship Elizabeth, Capt. Fokkens, fetched, November 27, 1836, off Baly Strait, with a S.S.W. wind, and unsettled weather. He kept within a few miles of the shore, lying W., W.N.W., and N.W., and arrived the 30th of the same month at Tylatiap. As a general rule, therefore, it would seem to be advisable for vessels bound to that port, or to the Strait of Sunda from Baly Strait, to beat up along the coast when meeting with southerly winds; but with strong W. and W.S.W. winds, and unsettled weather, and not advancing, to re-

solve at once to run to the southward as far as 17° S., or thereabouts.*

South point of Java.

239. The South point of Java, in 8° 47′ S. and 114° 29′ 10″ E., or 1° 42′ 30″ E., of Sourabaya, is the southernmost projection of the great tongue of land which forms the south-eastern extremity of Java. From this point the coast curves in a little, E. b. N. for about 8 miles towards the Zuidoost Hoek or S.E. point of Java; and again, N.W. b. W. for about 6 miles towards Tambang Point. This part of the coast seems to be fringed with reefs under water, to a mile off shore, with 20 and 25 fathoms close outside, and with 70 and 100 fathoms of line, and no bottom, at 2 and 4 miles distance. Continual breakers will be seen there, and the impracticability of anchoring in such large depths makes it advisable to keep at some distance off this coast, especially in calms and faint airs.

Gradjagan Bay.

240. Gradjagan is a large bay to the westward of Tambang Point. It is 10 or 11 miles wide, and about 6 miles across; and it is said to afford good anchorages during the eastern monsoon, in 14 to 8 fathoms water. On the western side of the bay, on a small river, stands the village of Gradjagan, but neither there nor in the wells along the beach, is good water to be had; nor can ships' provisions be procured. The coast being very bold, boats will find it very troublesome to land with the least surf, and with westerly winds this bay is open and altogether unsafe.

241. From Gradjagan Bay to Noesa Baron, or Baron Island, a distance of about 16 leagues, the coast is steep, rocky, and barren, forming a chain of small bights, lined with several islets and rocks, which make the approach dangerous. One of

* The mean of the passage made from Batavia to Tylatiap in four years (1839—43), was 16 days, the longest 38, and the shortest 8 days. The longest as well as the shortest passage both took place in October, but in general the passages in the different months were of the same length. The reason of which may be, the long time a vessel in the western monsoon is getting through the Strait of Sunda from Batavia; and, on the other hand, in the eastern monsoon, the short time a ship employs for that distance, when compared with the long passage from the Strait to Tylatiap.

Again, from Tylatiap to Batavia the mean passage was 9 days, longest 18, and the shortest 4 days. From Banjoewangie to Tylatiap, the mean was 10 days, the longest 34, and the shortest 4 days; the longest were generally from December to March, and the shortest from June to September. From Tylatiap to Banjoewangie the mean was 9½ days, the shortest 5 days.

these bights, 16 miles to the eastward of Baron Island, is called Vledermuis Bay, but from its rocky shore, large depths, bad shelter in most winds, and continual surf, is unsafe.

Baron Island.

The south point of Baron Island is in 8° 32′ S., and the west point in 113° 19′ E., and the island is 8 miles in length, and 4 miles in breadth. Its south side is low, fronting the sea, but the S.W., S.E., and E. sides steep, of considerable height, and rocky, and discernible at a considerable distance. The summit of Mount Semiroe bears from the east point about N.W. b. W., and its nearest distance from the shore of Java is 2½ or 3 miles, with 20 and 30 fathoms between them. At the N.E. angle of the island, there is a small bay, where tolerable anchorage may be found in the N.W. monsoon in 27 fathoms, but in most places, the island should not be approached within half a mile, as there are appearances of reefs under water.

242. N.N.W. ½ W. from the east point, and E.N.E. from the west point of Baron Island, the Java shore forms a projecting land-tongue; 5 miles to the eastward of which lies the village and the river of Poeger, where some provisions and water may be procured. This little place can be approached only in the western monsoon, and then with the greatest caution, on account of the breakers along the coast, as well as rocks, the position of which does not seem to be known. The river is navigable by very small vessels only.

Dampar Bay.

N.N.W. of Baron Island, the Java coast makes a deep bay, with 50, 30, and 20 fathoms water. The easternmost part of this bay has a sandy beach, which rises into sandhills or downs; the western shore is rocky, and it is said that dangerous reefs project some distance from the shore under water. Several rivers discharge themselves into this bay; the largest of them the Getem, Sayang, and Bambang, but have wide entrances and good water; each of them has its sandy bar, which occasions a heavy surf, and in most cases makes the landing impracticable. If this bay, the inner part of which is called Dampar, was better known, perhaps a good anchorage would be found there in the western monsoon; but it is not known that ships have ever touched there.

Mount Semiroe.

243. To the westward of Dampar the country inland is mountainous, and in clear weather a good mark to correct the

reckoning is the high hill of Semiroe, the conical summit of which is in 8° 8′ S. and 112° 58′ E., and discernible 20 leagues. The coast forms here several bights, of which the principal, Plelot Bay, bears about S. ½ W. from Semiroe Peak. This bay might afford good anchorage, being a mile long, and half a mile wide at the entrance, but as it is never visited, the dangers as well as the depths are unknown.

Sempoe Island. 244. Sempoe Island is 8 miles to the westward of Plelot Bay, and its W. point lies in 8° 28′ 30″ S., and 112° 43′ E., or about S.W. b. S. from Semiroe Peak. The island is 5 miles long, and consists, as does all the adjacent coast, of high rocks. It is separated from the main by a strait a quarter of a mile wide, and was visited, in 1837, by the two Lieuts. E. A. and A. Von Vloten, D.R.N. In the western entrance of this strait there are several rocks and small islets, but the eastern entrance has a wide mouth and also two islands, and thus forms a bay which may perhaps afford good shelter in the west monsoon. Those officers, however, did not take any soundings, and this strait therefore must be considered as still unknown, and not to be used unless compelled by necessity.

245. From the island of Sempoe the coast runs about 17 leagues W. b. N., and consists of a ridge of steep rocks, fronted by an uninterrupted line of surf. At a little distance the depth of water is very great, and the shore has never been examined as far as it is known.

Segoro Wedie Bay. 246. Segoro Wedie Bay* is one of the most splendid bays of the whole island of Java, as well with respect to its situation and fitness for trade as to the magnificent appearance of its extensive basin, surrounded by its high and picturesque land, or by the numerous islands in its entrance. This bay was surveyed, in 1838, by Mr. J. D. Van Herwerden, assistant resident, and, in 1839, by Lieut. B. G. Escher, D.R.N.; the latter doing his work trigonometrically, and with such care that his chart of the bay deserves unbounded confidence. From their surveys, we can state that the entrance between Goenong and Klappa Islands is nearly 2 miles wide, and that the length of the bay is full 4 miles. The latitude of Tawing, a village at the northern part of the bay, was determined by several observations

* See Plan.

to be 8° 16′ 40″ S., and the longitude by a single chronometer, 111° 48′ E.

Lieut. Eschauzier, in 1841, placed it 2 minutes, and Lieut. Stoll 4 minutes, farther W., and the mean of all the observations reduced to the group of Limo Rocks (or Five Islands), which are full 2 miles S.E. of the entrance, places the group in 8° 22′ 45″ S., and 111° 48′ 45″ E. Outside of the bay, besides the Limo Rocks, there are several other small islands, but all within 3 miles of the shore, and as some of them are elevated from 120 to 400 feet above the sea, they serve as leading marks towards the entrance of the bay. All these islands, as well as the adjacent coast, are steep-to, rising abruptly out of the water, so that a ship may pass on either side of them when entering the bay. In the chart of Van Herwerden there is a dangerous rock, with Goenong Island bearing W.N.W. ½ W., Wot Jaloe Point N.N.E., Losari Island E. ½ S., and the W. point of Boyo S. b. E. ½ E.; this rock, which he calls Bergat, was said to carry only 3½ fathoms at low water: Lieut. Escher made fruitless researches for this rock all round the above bearings, and found nothing but a small knoll of coral on it, with 9 fathoms about half a mile more to W.N.W.; and concludes that no such danger exists. But the channel is wide, and no large ship should wantonly run over the assigned spot. *Bergat Rock.*

There are no other concealed dangers in the entrance of the bay, as the Batang and Skel Rocks remain always at the highest water above the surface, and are discovered usually at a large distance by the surf upon them, particularly in bad weather; both rocks are steep-to, and consequently not to be approached in the night by the lead.* *Batang and Skel Rocks.*

247. The Limo Rocks have little or no vegetation upon them. The westernmost is less elevated than the other one. *Limo Rocks.*

248. The Babaan Rocks are two needles elevated 40 or 50 feet, and united by a reef which projects 160 yards farther to the northward; but which is scarcely visible above the surface, being usually covered by high breakers. The passage between the Babaan and Skel Rocks has a rocky bottom, with *Babaan and Skel Rocks.*

* Mr. Herwerden says that, according to the fishermen, Batang Rock is sometimes covered at spring tide; if this be the case, it might easily escape observation when the water is smooth.

irregular but large depths; and both these rocks may be approached very near, being steep-to.

Malang Rocks, Tamengan and Anakan Islands.

249. The passages between Malang Rocks and Goenong, and between the islands of Tamengan and Anakan, though deep, are rendered unsafe by under-water rocks.

Klappa and Roei Rocks. Wot Jaloe Point.

250. The rocks of Klappa and Roei are very steep; but Wot Jaloe, the western point of Gemah Bay, should not be approached too near.

The soundings amongst the islands in the outer bay are from 30 to 60 fathoms, in most places sandy bottom, and, excepting for the great depth, afford good anchorage with light airs and smooth water.

Current.

251. Lieut. Escher found very little current from July to October, in the bay, and not stronger than a half to 1 mile per hour to the westward. Lieut. Eschauzier, however, experienced in the latter part of September, 1841, near the Island Skel, a current to the eastward of $2\frac{1}{2}$ knots; and he therefore recommends vessels not to weigh without a sufficient land or sea breeze, as the current, if setting towards the islands, might endanger them in a calm or faint air.

Segoro and Damas Bights.

252. Segoro Wedie Bay divides into two bights, Segoro and Damas; the former is bounded to the southward by the sugar-loaf shaped island Rembeng, and to the northward by the Rock of Pegat. In this bight a ship will be sheltered, in 14 fathoms mud, from wind and sea in the eastern monsoon, on the following bearings: — Rembeng S. b W. $\frac{1}{2}$ W., Manoek Rocks N.N.E., and Pegat N.N.W. $\frac{1}{2}$ W.; and there are no dangers but the prongs of Manoek Rock, which stand some feet above the water, and some foul ground to the eastward at Becetang. Another good anchorage in Segoro Wedie Bay is north of Pegat, in the bight occupied by the village Ngessrep, where a ship will be sheltered from south and easterly winds, and lie close to the shore in from 6 to 3 fathoms water. Fresh water may be procured, and communication may be kept up with the shore, by the ship's boats or by proas, as most convenient respecting the cargo.

Ngessrep Bight.

Fresh Water.

Swell and Squalls.

253. The anchorages along the western side of the bay are not safe, and, with a southerly wind, even those on its eastern side are not exempt from a heavy swell that rolls heavily in; while, with south-easterly gales, sudden gusts of wind

come down from the mountains, but they are not of long duration.

254. In Segoro Wedie Bay there are other places where fresh water may be procured, such as the small river Pantier; but boats must enter this river at high water, on account of the rocks near its mouth. A high surf always runs nearly up the northern beach. Three or four miles inland there is a steep and rugged chain of mountains, from 1,500 to 2,000 feet high, which forms the boundary between the districts of Prigie and Kampak; and over which it is very troublesome to transport the products of the Regencies Ngrowo and Trengalek. *Mounts near the Bay.*

255. In the middle of Segoro Wedie Bay there are 40 fathoms, and, for the most part, a clay bottom, regularly shoaling towards the shores. Usually the springs occur from 1 to 3 days after full or change, the rise at such times being from $8\frac{1}{2}$ to 10 feet; and the times of low and high water, 4 and 9 o'clock. The tides, however, are very irregular, and do not seem to be subjected to any fixed rule. *Tides and Currents.*

During the stay of H.N.M. schooner Krokodil in this bay, there were continual rains, particularly during the night, otherwise the weather was tolerable; the warmth was seldom harassing during the day, and the nights were rather cool, though usually calm, or there was a very faint land-breeze. The foul weather and heavy rains that Lieut. Escher experienced, in the latter part of July and the beginning of August, were uncommon circumstances, according to the evidence of all the island chiefs. The eastern monsoon is reckoned very healthy there. *Weather.*

By several observations, Lieut. Escher ascertained the variation of the needle to be 0° 37′ W. *Variation.*

256. About 4 miles to the eastward of Segoro Wedie Bay there is a deep bight, between Wot Jaloe Point in 8° 19′ 5″ S., and 111° 50′ E, and Djong Pakis Point in 8° 17′ 50″ S., and 111° $56\frac{1}{2}$′ E. This bight is consequently $6\frac{1}{2}$ miles wide at the entrance, and it recedes 4 miles to the northward, where it is divided in two parts by a rocky projecting interval; the western part is called Gemah Bay, and the eastern Boemboen. Both were examined in 1839 by the assistant resident T. D. Van Herwerden, and the following is an abstract of his description.

Gemah Bay. 257. Just to the eastward of Wot Jaloe Point, the coast turns northward into Gemah Bay.

In general the coast is here rocky, but very steep, and except a reef to the eastward of Wot Jaloe, stretching off 2½ or 3 cables' lengths, there are no dangers. In the eastern monsoon the bay is wholly open to the wind as well as to a high running sea, except under the south-eastern point of Lemiring, where a ship will find a tolerable shelter close in-shore near the village of Popoh. The northern and western sides of Gemah Bay are unsafe in that monsoon, and consequently vessels cannot then anchor off Klatak, Gemah, Tengong, Tankilan, and Sidem.

258. The depths at the entrance of Gemah Bay, abreast of Wot Jaloe, are 40 and 50 fathoms, decreasing regularly to the northward to 30 and 25; and abreast of Lemiring, and again in the northern part of the bay, to 20, 10, and 7 fathoms. Near *Popoh Village.* Popoh village the ground shoals slowly, from which circumstance a ship may anchor conveniently in good holding-ground in 6 or 5 fathoms; but near Lemiring Point it is steep-to, as 10 and 6 fathoms will be found close to the rocks. Popoh has about 150 inhabitants, and affords good water and wood, but *Interior communication.* no ships' provisions whatever. Inland communication is here much more convenient than from any of the other bays of the south coast, as it is only separated from the interior by a ridge of hills 300 or 400 feet in height, which is comparatively low. Some other places are also inhabited, but very thinly, as the total amounts only to 230 persons. In Gemah Bay there are no proas, nothing but small canoes of 10 or 12 feet length, and 1 or 1½ feet beam, from 12 to 18 inches, and only fit to carry a single fisherman.

This bay has seldom or ever been visited by ships, and indeed the anchorage cannot be recommended, not being always safe in the eastern monsoon, even near Popoh. In the western monsoon some places in the bay afford good shelter. When approaching the bay, inside of Losari and Anakan Islands, look out for the above-mentioned doubtful rock Bergat, and avoid the reef near Wot Jaloe Point; but by proceeding outside of the islands, no dangers are to be apprehended.

Boemboen Bay. 259. Boemboen Bay lies 3 miles to the eastward of Gemah Bay, and extends from Pakis Point, upon which stands a

round hill of the same name, to Selo Pajong (a flat stone), which bears some resemblance, at a distance, to a dismasted wreck. Pakis Point is rocky, and the hills near it are high and steep towards the sea. The coast from Selo Pajong towards Gemah Bay is high in general, and has a few sandy beaches, which, however, are not fit landing-places for boats. The depths increase regularly throughout Boemboen Bay, from 45 to 4 and 3 fathoms, the latter depth being found off the small beach near the western point of the bay, and offers a good anchorage. With southerly winds a high sea runs into this bay, but as they draw to the eastward, the water become smooth, particularly near the S.W. point of the inner bight, where there is a small creek, with a good landing-place for boats. There being no inhabitants, no provisions are to be had; but the bay is unfit to be used in the eastern monsoon.

Segoro to Soembreng.

260. From Segoro Wedie Bay the shore stretches W., and W.N.W. 8 miles to Soembreng Bay, forming different points and small bights, of which those of Ngampiran and Nglondjo are the largest, though not offering good anchorage. The mountains hereabout are barren, and the rocky coast makes it dangerous to land; the soundings are considerable in the immediate vicinity of the shore; and though there are many rocks under water which have not yet been discovered, there is one which is just visible above the surface between Betity Point and Sassah Island, about 5 miles to the westward of Segoro Wedie Bay,

Soembreng Bay.

261. Soembreng Bay, in about 8° 20′ S., and 111° 38′ E., according to the assistant resident, Van Herwerden, is far inferior to that of Segoro Wedie, not only in regard to its smaller extent, but in its insecure anchorages and inconvenient landing-places.*

Kepanean Islands.

Two or 3 miles S.W. of this bay the three rocky and uninhabited islands, Kalengan, Prendjono and Kepanean, serve as good marks for this or for Pangoel Bay; Kepanean, the south-easternmost of the three, lies in about 8° 22′ S., and 111° 36′ E., and W. ½ N., 3½ miles from Sassah Island, near Segoro Wedie Bay.

* Capt. Eeg, in H.N.M. corvette Pollux, in 1826, placed Soembreng Bay in 111° 27′ E., but the position given by Van Herwerden was afterwards confirmed by Lieut. Eschauzier.

Soembreng Bay is 2 miles wide at its entrance, and contains no dangers except the rocks round the small island of Sroyoe, near its S.E. point; and Gebos Reef, which bears S.S.E. from that island, about 2 cables' lengths, but it shows itself above water. The depths in the entrance are from 35 to 40 fathoms.

Both sides of the bay consist of steep rocky cliffs, but they are connected by a sandy beach about 2 miles in length. At each end of this beach, upon which there is always a high surf, there is the mouth of a river. The eastern one has some rocks beneath the water's edge at high water, and very dangerous when there is the least swell. The water, however, is very good, and fire-wood may be had in plenty there. The western river is not so deep, and its mouth is so filled up with rocks that no attempt need be made to enter it.

The best anchorage in Soembreng Bay in the eastern monsoon is in the small bight of Krokoan, close to the northward of Pakis Point, at the eastern side of the bay. The depths decrease towards the beach to 10 and 6 fathoms; but a ship, though sheltered from S.E. and southerly winds, will be exposed sometimes to a heavy swell, for which reason this bay is not to be recommended in all circumstances. At the west side of this bay, in the small bight of Poero, a place with a sandy beach and depths regularly shoaling to 6 fathoms, any vessel will find a good anchorage in the western monsoon. The communication with the interior is difficult from the steep ridge of mountains.

Pangoel Bay. 262. Pangoel Bay is about 6 miles to the westward of Soembreng, and 5 leagues from Segoro Wedie; it affords a good anchorage in the eastern monsoon, and is frequently visited by coasting traders. In 1836 it was visited by Mr. J. Triesman, and, in 1841, by Eschauzier, whose sketch of the bay may be considered sufficient for practical use.

Sero Rocks. 263. At the distance of a mile from the S.E. point of the bay of Pangoel lie the dangerous rocks of Sero; they are partly above water, and though the southernmost is sometimes covered, its high breakers usually show its place. The passage to the eastward, between them and the S.E. point of the bay, is a mile wide, and seems to be free from danger, as all the rocks are visible above water. The common anchorage in Pangoel Bay is at the N.E. side in 7 or 8 fathoms sand, opposite the

Government Salt Storehouse; but as a ship is exposed there to a dangerous swell, and the landing is troublesome, another anchorage, a little more to the southward, in a bight abreast of Kongilang Island, is preferable. This bight is scarcely half a mile wide, but it has good ground, sand and clay, in 7 to 5 fathoms. The bottom rises gradually towards a sandy island, upon which stands the coffee storehouses: and there is a pier, which much facilitates the transfer of cargoes, as well as the intercourse of boats.

Rivers.

Two small rivers are discharged into Pangoel Bay; the Krambingan at the N.E. side is not navigable, and the Pangoel, in the middle of the bay, is navigable only by proas; fresh water may also be procured there. This bay was visited, in 1836, by the Dutch coasting brig Allen, Captain Corbet, who thought it better in the eastern monsoon than Patytan Bay: during the west monsoon it is entirely open, and consequently unsafe.

Pangoel to Patytan.

From Pangoel the coast stretches to the westward for 24 miles to Patytan, but forming some bights, of which Lorok Bay is the principal, although too small and too much exposed to afford any anchorage for ships. The coast is high, rocky, and lined by a continued range of breakers.

Patytan Bay.

264. Ships bound to Patytan Bay ought to steer close along the shore, for fear of passing it in the night, the opening not being wide; care is also requisite not to mistake it for Lorok Bay, as they bear much resemblance to each other; but as these bays differ 15 minutes in longitude, an error of this kind is not probable, if any confidence can be placed on the chronometers, and if due attention is paid to the following directions. Patytan Bay was surveyed in 1826, by Lieut. F. Hugenholtz of H.N.M. corvette Pollux, and, in 1831, by Lieut. De Perez, D.R.N., at present governor of Macassar. The middle of the bay lies in 8° 15′ S., and 111° 7′ E. The entrance is only 1 mile wide, but inside it expands to 2 miles in breadth and in length; and when it bears N. or N. b. E. the bay is open and easily discovered. The fair track into the bay is mid-channel between the two points, on both of which a high surf always breaks. Patytan Bay cannot be considered as quite safe, or as an agreeable resort, for ships must submit there to continued heavy rolling, sometimes

gunwale under, occasioned by the everlasting high southerly swell. Notwithstanding all this, the anchorage has in most places good holding ground, consisting of black sand mixed with clay, in 8 to 14 fathoms.* There are but two places in the bay fit for boats to land; the first on the western side, near a small patch of white sand called Temperan Beach; the watering-place is also there, and near it the best anchorage in 8 or 9 fathoms water. The other landing-place is near the eastern point of the bay, in Megelon Cove, which, though very small, is large enough to contain a single ship. In this cove there is very little swell, and 12 to 10 fathoms soft ground; farther in, a deep cleft will be discerned in the land, in the direction of N.E. b. E., forming a little harbour, with depths of 4 to 2 fathoms soft ground, and shoaling regularly to 3 feet, with a small white sandy beach without any surf at all. Both the little harbour and the cove in which it is situated are completely land-locked; but the communication with the chief town, Patytan, is difficult from the intervening mountains.

Megelon Cove.

Pantier River.

265. The fine river Pantier falls into the bay, at its N.E. side, but it is difficult to enter on account of its bar; sometimes, however, when there is water enough and no swell, boats do cross it; but to get out is still more difficult, as the ebb-tide produces a short and dangerous sea. The whole north side of Patytan bay is lined with a beach of white sand, but the high surf renders it impracticable for landing. The other shores of this bay consist of steep, inaccessible rocks, upon which the waves break with an everlasting noise. At full and change it is high water about 3 o'clock, and the vertical rise is a little more than 7 feet.

Patytan to Bollong Head.

266. From Patytan Bay a barren, woody, uninhabited coast of chalk mountains, and fronted by a continuous line of breakers, stretches W. b. N. and W.N.W. It forms, however, some small bights, of which Hombo, Krakal, and Baron are the largest, but all of them useless to ships. Farther on, from near Brossot to Bollong Head, the shore is not so steep, and

* Yet in August, 1829, the Dutch barque Thalia was driven from her anchors here, and totally wrecked. It was, however, blowing such a hurricane as the oldest inhabitants never before witnessed; some said an earthquake was felt. *See* Plan.

the beach rises into a chain of sand downs, about 25 feet in height above the water. Boats would find it very dangerous to land; and there is no known anchorage near this part of the coast, although, according to some reports, 9 and 7 fathoms are found at some distance off-shore.*

Baglen Head.

267. Baglen Head lies in longitude 109° 28′ E., and is a promontory of steep and inaccessible rock. Landing there is impossible from the high surf; and it is without doubt that there are some sunken rocks near it. Many instances are on record of boats and proas in endeavouring to land having been upset, and of large trading proas, as well as other vessels, having been wrecked there.

When coming from the eastward, Baglen Head seems to be surrounded by low land, and is a notable mark for ships bound to Tylatiap. From the S.E. or southward it has the appearance of an island with peaked hills. It bears much resemblance to Kambangan Island; but if the chronometers are not much in error, such a mistake is not probable, as the two points differ 24′ in longitude.

Schildpadden or Turtle Bay.

268. Schildpadden or Turtle Bay is the long bight between Kambangan Island and Baglen Head. According to the Kambangan pilot, this bight is without dangers, and has good holding ground throughout, except near the range of breakers. Some rivers that discharge themselves into it, cause irregular currents, with patches of discoloured water and ripples, and drive out trees and shrubs in abundance. In the eastern monsoon it affords no anchorage for ships, at least not without suffering from much wind and swell, near the village of Jettis; for though Baglen Head offers some partial shelter, by which landing is rendered less dangerous than at any other place, yet the promontory does not project enough to afford a safe anchorage. The only good anchorage in the whole of Schildpadden Bay is behind the eastern end of Kambangan Island, which shall now be described.

Kambangan Island.

269. Kambangan is separated from Java by a very narrow channel; and it occupies the whole space between the bays of

* In May, 1831, the schooner Iris was driven on shore near Brossot; but she was brought off after some days, and arrived safely at Batavia. While on shore, only once an opportunity occurred of sending a fisherman on board to learn who she was, and then not without danger.

Schildpadden and Penaniong. At each end of the island there is a harbour, Tylatiap and Tytando. The latter, to the eastward, is a place of considerable resort for vessels of all sizes; and on the right bank of the river, which empties itself into the former, stands the establishment of Kalie Poctjang.

To the northward the channel expands into Anakan Sea, which is fully 4 miles square, but from its extensive mud-banks it is navigable by proas and small vessels only. Kambangan is throughout its whole length high and rocky, but covered with large trees, and stretches from W.N.W. to E.S.E., its extreme length being 15, and its breadth 4 miles.

Tylatiap. 270. Tylatiap, at the eastern end of Kambangan, has of late years increased remarkably in importance, the excellence of its harbour making it the market for all the products of the adjacent country. It was surveyed, in 1830, by Lieut. de Perez, and, in 1834, by Lieut. Schuler, D.R.N.; but as the sand and mud-bank projecting from the Java shore seemed to be increasing, it was re-surveyed, in 1839, by Lieut. Rietveld, of which the present plan is a satisfactory proof; and again examined, in 1847, by Lieut. J. Groll, D.R.N.

The south point of Tylatiap lies in 7° 44′ 40″ S., and 109° 5′ 30″ E.; and the flagstaff on Bollong Head is in 7° 45′ 12″ S., and longitude 109° 7′ 00″ E.*

271. Vessels bound to Tylatiap ought to steer for the eastern end of Kambangan. This island, from the southward, is very conspicuous; the east part being high and terminating in the bluff head of Bollong. In clear weather, and when the mountains are not hidden by clouds, the conical peak of Tegal will be an excellent mark; by bringing its summit N. b. E. ½ E., when Bollong Head will be seen in the same bearing; but if the peak should be made on the bearing of north, then the head will rise in the N.W., about 20 miles distant. When approaching to within 5 or 6 miles to the eastward of Kambangan, some hills will be discerned, which are situated to the eastward of the rivers Serayoe and Adirejo, and near the shore, and have

* The above latitude is the mean result of 136 observations of the sun, on or near the meridian, by Lieut. Rietveld, and the longitude was deduced by him from 46 series of lunars east and west of the moon, as well as from several accurate bearings of the Peak of Tegal (see Art. 134). The variation of compass was found by him to be, in 1839, 0° 37′ W. *See* Plan.

the appearance of an island. In order to recognise the land with the greater certainty a tower was built upon Mount Tiga, about 3 miles S.W. $\frac{1}{4}$ S. from Bollong flagstaff, but it was blown down. In coming from the eastward, and getting near the island, the rock of Bollong will be perceived, lying 87 yards from the N.E. point of Kambangan Island; this rock, at which the channel begins, is very small, covered with some trees, and hollow underneath.

272. Lieut. Rietveld says:—When Bollong Rock bears west at 2 miles distance good anchorage will be found; when the S.E. point of Noesa Kambangan bears S.S.W., 12 or 13 fathoms, sandy bottom; the east point approached within half a mile, 8 fathoms, same bottom; the east point bearing south, 5 or 6 fathoms, sand; and N.E. of Bollong Rock, or of the flagstaff, at low water, 4 fathoms. Inside, or to the westward of Bollong Rock, there are again 6 and 8 fathoms, and throughout the whole channel good anchorage ground will be found, as indicated by the chart.*

273. The flagstaff is erected on a brick pyramid of about 20 feet in height, which, to render it still more conspicuous, is white; when a vessel approaches the Dutch colours are displayed.

A Government native pilot proceeds instantly on board of any vessel on her making the signal for a pilot, which should be accompanied by a gun. *Pilot.*

With westerly winds there is no great swell under the lee of Kambangan Island, and vessels to the N.E. of Bollong Head, while waiting for a pilot, may anchor there as soon as they are sufficiently sheltered. In the south-eastern monsoon the pilot will come out, unless the wind and swell are too high, in which case that anchorage would not be safe, and then vessels should stand off and on in the offing, unless they are so far acquainted with the place as to be able to run inside of Bollong Head, where they will be protected from the wind, and not very much incommoded by the swell. While waiting outside, keep Bollong

* According to the natives, there is a rock outside of the head, on which there are only 2 fathoms water, with the flagstaff W.N.W., and about 360 yards from the island. Lieut. Rietveld found in this place a rocky bottom and 7 fathoms depth, but no rock. When following the above-mentioned directions a ship will run no risk of this doubtful danger.

Head to the W. of S.W., as the outer or sea-bank stretches from the point N.E. of the Hard Sand-bank opposite Kambangan.

Beacons outside the Channel.

On the edge of this sea-bank there are three stakes or beacons, on each of which there is a piece of wood in the form of a cross, and over it a bamboo basket; the outermost is in $2\frac{3}{4}$, and the two others in 2 and $1\frac{1}{2}$ fathoms water.

Tylatiap Channel.

274. The channel up to Tylatiap is very narrow from abreast of Bollong Rock, where it makes a curve towards the S.W.; and between the end of the Hard Sand and Kambangan it is not 220 yards wide, but on both sides steep-to. On both sides, however, there are beacons which stand in about $1\frac{1}{2}$ fathoms water.* In the middle of the channel there are from 4 to 9 fathoms, with a few spots which carry only 20 feet; and it is intended to erect some large beacons on the Kambangan shore, to serve as leading marks through the channel, so that the frail beacons, which at present stand on the edges of the rocks, and which are often washed away, may be dispensed with.

Beacons.

Brambang Roch.

275. To avoid a rock which bears north of Mount Brambang, or S.S.E. from the south point of Tylatiap, and which carries only $2\frac{1}{2}$ fathoms at low water, keep the point of Sodon in sight, well outside of Agong Point. This point Agong, in one with the foot of the farthest visible mount, Boaya, leads just upon the rock, Sodon Point being then, of course, shut in.† Keep nearest to the Kambangan side, where good anchorage will be found S.S.W. from the storehouses, on the line uniting the pier and the watering-place, and in 5 or 6 fathoms, with a sand and mud bottom. The deepest water will be found on the Kambangan shore, which is also steep-to. A vessel lies here as in a dock, sheltered from all winds, and without any swell; so that since the pier was completed cargoes are shipped or disembarked with facility.

Anchorage.

Mud bank near Tylatiap.

276. The bight of Tylatiap, between the South point and Green Point, contains a soft sloping mud-bank, stretching out as far as the pier, and drying at low water spring-tides. With

* After passing the Bollong Rock, where the channel takes a curve to the S.W., strict attention should be paid to the beacons, those in the bight not being very conspicuous. By neglecting this, and by steering for the opposite beacons, which are more visible, a ship will necessarily run upon the bank.

† Agong Point lies S. $\frac{1}{2}$ E., and Sodon Point W. $\frac{1}{2}$ N., from the pier of Tylatiap, and the foot of Mount Boaya N.W. b. W. $\frac{1}{2}$ W. from Sodon Point.

the south point of Tylatiap in one with the flagstaff of Bollong, there are not more than 3 fathoms depth between those two above-mentioned points.

277. The following information respecting the tides, currents, and winds, in the neighbourhood of Tylatiap, has been collected from Lieut. Rietveld's remarks.

Tides.

The ebb tide runs between the easternmost beacons to the N.N.E. and N.E., and the flood to the S.W., over the Hard Sand-bank, and then partly turns to the W.S.W.

Abreast of Balie Rock, just to the westward of Rempak Point, the ebb tide sets to the N. and N.E., over the sand-bank; also the flood to the S. and S.W.; and in the west monsoon to the S.S.E., towards Banjoe Japa Rock, in the deepest part of the bight, from whence it follows the westerly trend of the channel. When the Hard Sand-bank is dry, the streams set of course along its edge.

To the westward of Tylatiap Point the tidal streams follow the direction of the channel; the flood, more than half the length of Kambangan Island, into the Anakan Sea, where it meets the flood which sets in through Tytando Bay and round the west point of Banting Mattie. The ebb runs in the contrary directions, sweeping round the bight of Banjoe Japa, and then N.E. through the narrows, and crossing the Hard Sand, or entering the sea in an E. or E.S.E. direction.

The velocity of these streams is variable; $2\frac{1}{2}$, 3, 4, $4\frac{1}{2}$ knots, and the ebb even 5 and $5\frac{1}{4}$ in the rainy season. The time of high and low water is, at full and change, low water, 2h. 35m., and high water, 8h. 45m.; the length of the flood being about 6h. 0m.; and the mean rise and fall about $3\frac{1}{2}$ feet. The greatest range of the tide that took place was 6 feet $3\frac{1}{2}$ inches. When the moon is on the equator, the post and ante-meridian are nearly of the same duration. The greatest difference between the heights of two consecutive tides, at the moon's greatest S. declination, was 1 foot 9 inches, and at the greatest N. declination, 2 feet 2 inches.

Winds.

278. In 1839 the S.E. and easterly winds set in at Tylatiap, about medio April, and blew without interruption till medio November, when the westerly winds began, although S., S.E., and E.S.E. winds, with rain, prevailed at noon until December. In the morning, before 8 or 9 o'clock, there is usually a gentle

land breeze from the W. or W.N.W., which enables vessels to go out in the eastern monsoon. Then, in both monsoons, it is calm till 11 o'clock, which allows ships to warp or tow in, during the western monsoon. From the middle of July, however, till the beginning of October, there are continued easterly winds, without the least interruption; and in August and September they are accompanied by heavy rains, and sometimes storms, with no westerly or land breeze at all.

279. Two large warping buoys are to be placed in the Bollong channel, to enable vessels in the E. monsoon to haul out and make sail, an operation very dangerous at present, from their own anchors, and sometimes impracticable. Deep-laden ships waiting outside for a fit opportunity to weigh often suffer severely from the sea. In both monsoons a small steam-tug would therefore be a great benefit to the trade of Tylatiap.

Watering-place. The watering-place on the Kambangan shore is near the anchorage, and affords good and pure water; a brick aqueduct and reservoir make the process convenient.

280. The island of Kambangan is all rock and wood, there is therefore plenty of fuel, and even trees fit for topmasts; there is also a profusion of game, such as deer, wild hogs, tigers, rhinoceroses, &c. *Refreshments.* Refreshments are to be procured plentifully at Tylatiap, but few ships' stores at present. The favourable position of this port for general commerce has so wonderfully increased the number of vessels by which it is visited, and so conveniently is it connected with the rest of Java, that perhaps at no very distant period it will be the principal entrepôt of the whole island.

Climate. The climate, however, cannot be considered healthy, especially in the western monsoon; and malignant fevers prevail sometimes after a long drought, and during the rainy season.

281. At Tylatiap are residing an assistant resident, a store-keeper, and some civil authorities of minor importance, and a small garrison at Karang Bollong, a military doctor, hospital, &c. The western entrances of Segara Anakan, which are formed to the westward of Kambangan Island, and which are visited sometimes by coasting vessels to fetch a cargo of salt for Kalie Poetjang, are very narrow and intricate. Bessek Head, the S.W.

extremity of Kambangan Island, lies in 7° 41′ 45″ S., and 108° 53′ E., or 14′ W. of Bollong station, according to Lieut. de Perez, D.R.N.; and the following remarks are borrowed from his reports.

282. Tytando Inlet, the western entrance to the Sea of Anakan, between Kambangan and the Java shore, is 2 miles long, and for a mile 2 cables' lengths wide; and both sides are high, steep, and rocky. Wré Island divides the inlet into two parts, and there are also some detached rocks, which make it still more intricate.* The opening into this inlet, which lies 2 miles N. of Bessek Head, Kambangan, is not discerned easily when coming from the southward, even at a short distance, from its tortuous course and its high shores; but steering a little northward of Bessek Head, the Isle of Wré will easily be distinguished when standing in-shore. *Tytando Inlet.*

283. Ships bound to this place in the eastern monsoon should make the land a little to windward of the western end of Kambangan, and then run along towards the Isle of Wré, but not forgetting the Amboer, a dangerous sunken rock, bearing N. b. W. ½ W., 700 yards from Bessek Head. *Amboer Rock.*

In the western monsoon, a ship should first steer for Cape Mandararie, at the extremity of Penaniong Bay, and bearing W.S.W. ½ W., 19 miles from Bessek Head. From Cape Mandararie the course of E.N.E. leads into the entrance of this inlet.

The steep sides of the Tytando Inlet intercept all winds which do not blow straight through, and the little room it affords for working, along with its winding form, in most cases render towing or warping unavoidable. A ship must trust chiefly to the tides, and when she arrives at the mouth of the inlet, she should anchor and wait for the flood. It need scarcely be mentioned, that with westerly and southerly winds there will be a heavy swell there, and although the holding ground is good, a ship cannot be said to lie in safety.

With southerly winds, in either monsoon, the entrance of this inlet is very troublesome, and sometimes impossible; but with easterly winds, and no high sea, a ship may anchor near the south side of the Isle of Wré, and wait for a favourable tide.

* *See* Plan of Tytando Inlet.

Bator Cove.

284. Between the entrance of the inlet and Bessek Head, there is a small bight called Bator Cove, which, though only half a mile wide, affords good shelter in easterly winds. It has a sandy bottom, at the entrance 7 or 8 fathoms depth, and a cable's length off shore 5 fathoms.

In the passage there is an irregular bottom of gravel and broken rocks, and not till in the Anakan Sea will better ground be found, and there only for a small space. When abreast of Banting Mattie, a ship will be land-locked on all sides, and being no longer exposed to the swell, she may anchor in safety; but she should be provided with chain cables, for the channels being passed entirely by warping or towing, it is necessary to bring up very frequently.

Wré Island.

285. The Isle of Wré, which divides this inlet in two parts, is high, rocky, and densely clothed with trees, stretching N.N.E. and S.S.W. nearly a mile in length, but varying in breadth from 440 to 55 yards. The passages to the E. and W. of Wré Island are called respectively Tando and Sehel. It is difficult to prescribe under what circumstances either of these channels should be preferred,—the position of the vessel, the wind and weather, the tide, and other considerations,—must decide the choice of the prudent seaman.

Tando Channel.

286. When proceeding through Tando Channel it should be considered that the reef projecting from Serang Point, (which is the western extremity of Kambangan, and bearing E.S.E. from the S. point of Wré,) is not so dangerous as its heavy breakers would indicate at the first appearance; for outside of this reef there is hard sand ground, with 10 to 14 fathoms water, where, although much exposed to the swell, anchoring is not dangerous. In bad weather, indeed, this reef should never be approached, except to pass it with a leading wind and good way. Within Serang Point lies the small island of Manok, and W.N.W. from it the dangerous rock of Tongak, which is, however, visible at low water. The channel leads between this island and some rocks, and is only 328 yards wide, with from 5 to 18 fathoms depth in the middle. Between Tongak and Wré the passage is barred by rocks, and to the eastward of Manok there is only from 1 to 3 fathoms depth. Accordingly vessels should steer close along the W. side of Manok Island; thence with a N.E. or E.N. easterly course in

12 to 20 fathoms depth, along the projecting peninsula of Java, called Siragalo; and pass Cape Mattie with a N. or N.N.-Westerly course. Siragalo peninsula is high and steep, and may be passed at the S.E. and E. sides at half a cable's length, in 6 and 12 fathoms water; but the Kambangan side should not be approached too near, on account of the rocks of Gomboyok, which are dry at very low water, and bear S. b. W. and S.S.W. from Cape Mattie, and E. b. N., and E.N.E. from the point of Siragalo. The eddy of the ebb-tide along the Kambangan shore sets right upon those rocks. Cape Mattie lies half a mile N. of Siragalo, and half a mile farther, on the Java shore, the river Tytando falls into the sea. The anchorage off Cape Mattie is in 12 to 20 fathoms water, but a better berth may be found in 7 to 10 fathoms, sandy bottom, about 4 cables' lengths from the mouth of the river Tytando. There being extensive reefs on the Java shore, and in the lagoon of Anakan, and the tides and eddies being very irregular, it is advisable to moor the ship. *Siragalo.* *Anchorage.*

287. The Sehel Channel to the westward of Wré Island is not so dangerous as that of Tando, and has, throughout its whole length, irregular depths, from 4 to 12 and 16 fathoms, gravel and broken rocks. It is necessary, however, to keep in the mid-channel, as there are but 3 fathoms water to the N. and N.E. of the Isle of Wré; for 330 yards distance, and to the westward of the peninsula of Siragalo, the Rawit Rocks, which are dry at low water, project 100 yards distance off shore. *Sehel Channel*

288. This channel is longer than that of Tando, and has the further disadvantage that, when the wind is not favourable, vessels cannot get directly inside of Siragalo, and they are compelled to anchor, which occasions loss of time. In such circumstances, it is better to wait to the S.W. of the north end of the Isle of Wré, because the N. and E. sides afford less shelter, and a nasty swell makes the eastern anchorage very inconvenient. When Siragalo has been rounded, proceed according to the directions for the Tando Channel.

As both these channels are too intricate for strangers, they should not touch here, unless in a case of high necessity, without a pilot.

289. The rise and fall of the water depend much upon the winds, and on the more or less efflux of the rivers which fall *Tides.*

into the Anakan Sea; spring tides generally rise 5 to 5½ feet, and the neap tides 3½ to 4 feet. The currents are unequal in force, and the duration of the streams very irregular, except when the rivers are low, the flood and ebb then changing every 6 hours; but while the rivers are full, the flood runs 3, and the ebb 9 hours. At full and change, the times of high and low water are too variable to allow us to give the establishment, although 6 or 7 o'clock may be assumed as near the truth.

Tytando Bar. Across the mouth of Tytando River there is a bar, which dries in some places, but leaves a channel of a half or of a fathom in depth at low water. Vessels of any draught cannot pass this bar, and consequently cannot reach the storehouses, which are built upon the right bank of the river at Kalie Poetjang; their cargoes are generally discharged into proas fitted for the purpose.

Water. On the Kambangan, as well as on the adjacent Java shore, there are wells full of fresh water, but it is said that this water is not wholesome, and that it is more prudent to obtain the necessary supply from Tytando River, which is very good when the tide is out, but at some distance from its mouth.

Penaniong Bay. 290. Penaniong Bay, formed between the western end of Kambangan and Cape Mandararie, is about 6 leagues in extent, and is divided into two unequal parts by the peninsula and point of Penaniong, the eastern Maurits Bay, and the western Vries Bay.

Maurits Bay. 291. In Maurits Bay, between the peninsula and Kambangan Island, a ship may find sufficient shelter in the western monsoon, as, according to Horsburgh, in his East India Directory, where he states, that the English Company's ship Anna, bound to Bencoolen, anchored in that bay December 23, 1703, in 7 fathoms, black sand, with the extremes of the land bearing from E.S.E. to S.S.E. ½ E.; the latter bearing being that of the S.W. point of the bay. She struck her topmasts, examined her rigging, wooded and watered, obtained some rice, buffaloes, fruits, and vegetables, and sailed January 10th. When entering Maurits Bay, a rock perforated like the arch of a bridge will be discerned, also three rocks in a line, like sugar-loaves; there are no dangers, the soundings decrease gradually till within a mile of the shore, where a ship may anchor, or nearer if requisite; and fresh water may be procured easily in

a small sandy bay. It is not known whether this bay has been visited since that period; and therefore we have had no means of verifying the above-mentioned merits of that bay. West Penaniong or Vries Bay, between Karras Point and the peninsula, affords, according to Horsburgh's India Directory, a good shelter from the western monsoon. Refreshments may be easily procured, but fresh water with great difficulty. The Anna anchored here in 11 fathoms, fine black sand, in December, 1703, the western extremity of the land bearing S. ½ W.; the eastern extremity E. b. N., and a mountain, probably Mount Tegal, N.E. b. E., appearing like a sugar-loaf, high over the surrounding land. Here she remained ten days, and finding the natives friendly, cut timber for spars and fuel, and procured plenty of rice, fowls, vegetables, as well as some buffalo beef; she found abundance of fish in this sandy day, but proceeded to Maurits Bay to fill up her water.

West Penaniong, or Vries Bay.

292. From Cape Mandararie the coast stretches westward, and then W.N.W. and W. b. N., to Cape Anjol, a distance of more than 40 leagues, without meeting between these points anything worth notice. Notwithstanding, there are two points where, at Cape Santiang, the coast curves in for some miles; and still more at Cape Eurum, about 107° 40′ E. longitude.* Near Boemie Point, which lies in 108° 21′ E., there are two small islands, the westernmost of which is round, and the other low and more level.

Cape Mandararie to Cape Anjol.

Eurum Bay.

293. This part of the south coast of Java seems to be free from dangers, although off most of the points there are reefs, on which the sea usually breaks with violence, and in every bight or curve a heavy surf rolls up the white sandy beach. In general, at 4 miles distance off shore, 50 to 30 fathoms will be found; and within that distance a 30 to 12 fathoms line will reach the bottom, which is mostly sand, and tolerably good holding ground, were it not for the very high swell. Vessels beating up along this coast should therefore keep under sail during the night, and not approach too near the shore; but in

* As it was supposed that this bay, which receives the rivers Eurum and Tytkadiang, might afford anchorage for vessels sent to collect the produce of the adjacent district, Lieut. P. A. Schultz, D.R.N., was sent, in 1842, to examine it; but he found it quite open to the southward, and quite unfit for that purpose.

all cases their ground tackle ought to be kept in readiness for immediate use if required.

294. From Cape Santiang to the eastward the coast is low near to the sea, woody and cultivated, and of an agreeable appearance, but to the westward of that point to Cape Anjol it is much higher and mountainous.

295. Coasting along this part of Java, a ship may often correct her reckoning by the summits of the mountains; the positions of the Mounts Patoeha, Tiloe, Papadayang, and Tykoray, between 107½° and 108° E., have not been yet ascertained with accuracy, but a little more to the westward, in clear weather, the bearings of Pangerango (blue mountains) and Salak, of which the places and the elevations have been determined, will be satisfactory.*

Cape Anjol. 296. Cape Anjol, in the old charts called Wine-coopers (Wynkoops) Point, is situated in lat. 7° 25′ S., and long. 106° 28½′ E. The point is low, but nevertheless easily distinguished, and from the westward is very conspicuous. Near the point there is a low sandy island, with some trees on it. To the eastward of Cape Anjol the coast bends slightly round to Gadia Point, and has somewhat of the appearance of a wall with embrasures. About 3 miles off shore the depth is 19 fathoms.

297. From the Cape the coast trends suddenly to the N.N.W. for about 3 leagues to Cape Monyol, and from thence N. b. E. and N.N.E. 6 miles to Pantyoer Point and Zand Bay, which extends to Cape Ragat, where Wynkoops Bay begins.

Wynkoops Bay. 298. Wynkoops and Zand Bays, as well as the adjacent coast, were trigonometrically surveyed in 1837, by Capt. F. H. Ampt, in H.N.M. corvette Castor, and schooner Krokodil.†

These bays are both in the Preanger Regency; the former lies N.E. and S.W., and is entirely open to W. and S.W. winds. Its entrance points, Ragat and Payong, bear N.W. b. N. and S.E. b. S. 9½ miles from each other; and the whole length of the bay is 10 miles. At the N.E. side of the bay are the government storehouses for coffee and salt; and their position has been determined by many observations to be 6° 59′ 30″ S.,

* Lieut. Smits, in his Guide for the Islands east of Java, gives the latitude of the summit of Pangerango 6° 46′ 10″, which is about a minute farther south than that stated in this work, Art. 100.

† *See* Plan of Zand Bay.

and 106° 35′ E., or 17′ W. of Batavia. The variation of the compass was, in 1839, 0° 45′ W. There are many spots of good anchorage ground, but a large funnel-shaped space in the middle channel, leading from the entrance to the store, is more than 100 fathoms deep. Two cables' lengths due west from the stores there are some sunken rocks, with 3 and $1\frac{1}{2}$ fathoms water; and they so fend off the sea, that a communication may always be kept with the shore in boats. The bay is surrounded by high hills, which are clothed with trees to the water's edge. In some places ragged points project with a few scattered rocks upon them, some visible and others invisible, and reaching half a cable's length or more off shore. The best roadstead is to the southward of the storehouses, and is called the Palaboen Radja. Regular soundings will be found there and along the coast as far as Gambang Point, with good holding ground of clay and sand; and vessels may safely anchor there in as far as 8 fathoms, or from half a mile to a mile off shore.

299. Between Gambang and Ponnay Points there is also good anchoring ground, but the water is too deep there, being at half a mile from the rocks 50 fathoms, and a little farther 100 fathoms, no ground. Between Ponnay and Ragat Points, the latter being the S.W. point of the bay, there is no anchorage, as there is no bottom at a quarter of a mile off shore with 50 fathoms. In the northern part of the bay, vessels may also anchor to the westward of Pamœlang Point, up to the River Tyboreno, a berth frequently taken by the Castor and Krokodil during the survey. In the western monsoon it is better to anchor in a greater depth, as the usual road is not then so safe, the winds raising a considerable sea. At the South side of the bay, if it be necessary to land in the Eastern monsoon, smooth water will be found in some places, where native huts are seen near the beach, or behind the rocks; but at the N.W. side there is then no landing place at all.

300. At night the N.E. side of the bay is usually obscured by mists; and as the depth in the entrance is too great for anchoring, all vessels should stand off and on till morning; and this they can do without trouble, there being no tides worth mentioning.

Tides and Currents.

301. With heavy rains the current from the River Mandirie sets to the S.W. along the coast, but is never stronger than three-quarters of a mile per hour; and in the N.E. corner of the bay there is none. From the River Tyboreno also there is sometimes an outset of 2 miles per hour; but this N.W. part of the bay should never be visited without necessity, for although the ground is good enough, when close in, yet there is much danger there from the breakers.

In neap tides the rise and fall near the storehouses is 2 feet 7 inches, and in the springs about 5½ feet. At full and change the time of high water is 5 o'clock, but the time, as well as the rise, depends much upon the influence of the rivers, which often disturb its regularity.

At full and change there is commonly a change of weather; baffling and variable winds, with sudden squalls, predominate about this time, and the sea runs higher.

302. The land wind during the night is either N.E. or S.E., according to the side of the bay; the sea breeze sets in usually at 9 or 10 o'clock in the morning, and in the eastern monsoon is not stronger in the roadstead than a topgallant breeze.

The little strength of the eastern monsoon in this bay is probably caused by the high mountains which surround it, and though in the monsoon the western winds blow with force, Wynkoops Bay is visited throughout both seasons by coasting vessels, as well as by large ships, for they are at all times sure of finding a good anchorage.

303. Ships coming from Europe in the eastern monsoon generally shape their course so as to make the land to windward of Sunda Strait, and it often happens they get first sight of the land near Cape Anjol or of Wynkoops Bay. Should a vessel in such a case require fresh water, it may speedily be procured in Wynkoops Bay, whilst beef, rice, and fowls may also be had there. This bay is also very convenient for shipping produce for Europe.

Rivers.

The only river of importance in the bay is the Mandirie, which is of considerable breadth, but a bar at its mouth is an impediment to its navigation, and the stream meeting the swell produces heavy breakers. The other rivers divide in rivulets and small branches, and disperse themselves on the beach without being noticed.

304. Zand Bay, $1\frac{1}{2}$ miles to the S.W. of Wynkoops Bay, is about $3\frac{1}{2}$ miles across, between the points of Jaiar and Pantyoer; but farther in contracts to $1\frac{3}{4}$ by 1 mile. The N.W. point of the little island of Mandra in this bay is in 7° 11′ 7″ S. and 106° 9′ E. The depths at the entrance are irregular, from 40 to 50 fathoms, but just outside, in a line between Ragat and Pantyoer Points, and bearing N.W. $\frac{1}{3}$ W. from Mandra Island, there is a patch with 7 to 14 fathoms. A little inside of the entrance the depth decreases rapidly to 30, 20, and 10 fathoms, mud bottom, and to the north-eastward of Mandra to 7, 5, 4, and 3 fathoms, also mud. *Zand Bay.*

305. Besides Mandra, which is a remarkable rock, surrounded by cliffs, with some trees, there is Manok, another small rocky island, less elevated and more oblong.

This bay is essentially rocky, yet in the middle there is a large and good anchoring ground, consisting of mud mixed with sand. Along the north-eastern side of the bay, the rocks do not run off more than a cable's length, except at Jaiar Point, where a reef, visible above water, projects for a distance of 3 cables' lengths. There are many rocks, both visible and sunken, on the south side of the bay and near Mandra Island; one of them, called the Castor, is particularly dangerous, from its being in 11 fathoms and near the anchorage; it carries 2 feet at low water, but is only made visible by the breakers during the sea-breeze, its top not being above 8 feet in diameter. To the south-eastward of it 43 yards, there is another rock of the same kind carrying $2\frac{1}{2}$ fathoms. From the Castor Rock the north end of Mandra, bears S.E. b. E., Byoek Point S. $\frac{1}{4}$ E., and Pantyoer Point W.S.W. $\frac{1}{4}$ W. The best anchorage for a large ship in Zand Bay is about the middle, in 12 or 13 fathoms water, and with the following bearings: the north end of Mandra Island S.E. b. S., Pantyoer Point W.S.W., Jaiar Point N.E. $\frac{3}{4}$ E., and Ragat Point N.N.E. $\frac{1}{4}$ E., or about half a point open of the farthest visible land to the northward. When anchored on these bearings a ship will be N.E. $\frac{1}{2}$ E., about 900 yards distant from the Castor Rock, and to avoid that danger it is advisable, when entering the bay, not to bring the north point of Mandra Island to the southward of S.E. b. S. *Rocks in the Bay.* *Castor Rock.*

306. Capt. Ampt remarks, that soundings may be most carefully taken, and yet that sunken rocks may be afterwards discovered; for the lead, touching the side of a smooth rock,

glides down to the bottom, and shows a large depth, though very far from the truth; and this is liable to happen in all places where steeped peaked rocks, as is the case here, rise up from the bottom.

At the N.E. and S.W. sides of the bay the mountains approach close to the sea, but the S.E. shore is more even, and high and marshy alternately. The hills and the low land are all covered with high trees, and near the beach with bamboos.

Along the S.W. side of the bay, and upon the Island of Mandra, there is no great surf with the ebb, and during the flood the breakers just serve to make the rocks visible; but on the N.E. side of the bay the breakers are usually so high that boats can seldom find an opportunity of landing.

Latoe River. 307. The largest river which discharges into Zand Bay is the Latoe, S.E. $\frac{1}{2}$ E. from the Isle of Mandra. The vertical rise and fall of the water is there 4 feet 10 inches, and at half tide the river is navigable for boats. When past the bar across the mouth there are 3 and 4 fathoms depth, and the breadth is from 40 to 50 yards for about 2 miles up the river, where the water begins to be potable. The river is navigable 2 or 3 miles farther up, but there the breadth contracts, and the depth decreases to one fathom. Above that all navigation is precluded by large trees rooted up by the current and lying across the river. On the shores of this river there is a tree called *tonke*, or *toutot*, which grows only in marshy ground and brackish water, and the wood of which is not attacked by the sea-worm, according to the natives. This tree is very hard, sinks in salt water, and is more than 3 feet in diameter at the base, while at the height of 80 or 100 feet it still measures $1\frac{1}{2}$ feet.

Kanter and Maringo Rivers. 308. The rivers Kanter and Maringo, at the eastern side of the bay, in which there are waterfalls of 400 and 200 feet in height, are barred by breakers across their mouths, and consequently not navigable. The waterfall of the former is very conspicuous when passing outside of the bay, and also from its entrance. The shores of Zand Bay are thinly peopled, and have been visited sometimes by pirates. Thirty years ago a large village was demolished by them, and the inhabitants dispersed. The adjacent jungles abound with tigers and other wild beasts.

Bights south of Zand Bay. 309. To the southward of Zand Bay, between the points Pantyoer and Kapoo, there are two bights, also surveyed, in

1837, by Capt. Ampt, and found to contain good anchoring ground, mostly white sand with shells, and mixed with some clay.

From the numerous rocks along this part of the coast these bights are avoided by all strangers, but they are really very convenient to anchor in during the night in the eastern monsoon for vessels bound to Wynkoops Bay, and not being able to reach that road. A ship will then be well sheltered here, and also with southerly or even south-westerly winds, but in the western monsoon it would be very dangerous to anchor in either of them.

310. The northernmost of these two bights lies a mile to the southward of Zand Bay; it is not a mile wide and scarcely half a mile across; there are 28 fathoms at the entrance, but inside it shoals speedily to 10, 8, and 6 fathoms. Besides the rocks visible above water near the shore, there is a rock called Antho, bearing west half a mile from the south point of the bay; it shows partly above water, and should not be approached at its south and S.W. sides within half a mile, on account of rocks under water. On the south side of this bight there is a small river, which loses itself in the beach, but in most cases affording sufficient water for a ship. *Antho Rock.*

311. The southernmost of these two bights, separated from the former by Kapek Point, is also a mile wide and half a mile across, with 20 to 40 fathoms depth in the entrance, and shoaling inside to 9 fathoms water. Besides Antho Rock, to the northward of the entrance, there are no dangers, as the reefs which project but little distance off shore, and the Rock Kocok, in the middle of the bay, are visible above water. The anchorage is near the south side, where a small river runs into the sea, and affords in most seasons fresh water. *Kocok Rock and Reefs.*

312. Both these bights contain wood for fuel, plenty of fish, and turtle in abundance. *Refreshments.*

313. Between Kapoo Point and Cape Monyol, which bear S. $\frac{1}{2}$ W. and N. $\frac{1}{2}$ E. 3 miles from each other, there is another bight, with regular soundings of 20, 15, and 10 fathoms, and good anchoring ground, but H.N.M. corvette Castor, having remained here a whole day at anchor, found that she was not sufficiently sheltered, and that the surf was so high that landing was deemed almost impossible. In proceeding to the southward, towards Cape Anjol, the greater is the swell and the higher the surf; and although the lead marks from 10 to 40 fathoms, *From Kapoo Point to Cape Anjol.*

between 4 and 8 miles off shore, the coast to the southward of Kapoo Point affords no safe anchorages. Upon the rocks of Cape Anjol the sea breaks with tremendous force, preventing all intercourse with the coast; and in the eastern monsoon, as soon as a ship comes abreast of this cape, she will find that the wind considerably increases. H.N.M. schooner Krokodil, in August 1837, just outside of Cape Anjol, had a double-reefed-topsail breeze while the Castor lay becalmed in Wynkoops Bay.

Wynkoops Bay to Hussa Point.

314. From that bay the coast of Java stretches 9 miles west to Gebang Point, and from thence it trends more northwesterly. The coast is high and rocky, but becomes more level to the westward at Hussa Point, where there is a sandy beach; the whole coast is covered with trees. In the whole of that interval there is but little anchoring ground, and in many places very near the shore no bottom with 100 fathoms line. A little to the eastward of Hussa Point there is a bank of soundings carrying from 15 to 30 fathoms water, coarse sand and mud, and extending to Trowers Island. Hussa Point is in 6° 51′ 30″ S., and 105° 55′ 15″ E.

From this last-mentioned point, off which a reef projects a mile to the south-eastward, and between it and Malang Point, there are many rocks near the shore, but mostly visible. To the westward of the latter point is the mouth of the River Tybinoeangan, which is said to be navigable for small proas, provided there be no swell. From the point of Mentoyong, to the westward of that river, some shoals stretch out full 2 miles to the southward along with some sunken rocks, while, by keeping more to the southward, towards Trowers Island, 10, 15, and 17 fathoms water will be found. From the southern extremity of those shoals the following bearings were taken: Hussa E.N.E. $\frac{1}{2}$ E., Sodon Point W. $\frac{1}{2}$ S., and the western point of Trowers Island S. b. W. $\frac{3}{4}$ W.

315. The coast from thence to Cape Sangian Sira and Java Head, as well as Trowers and Klapper Islands, with adjacent depths and dangers, have been described at the beginning of this work.

THE

SEAMAN'S GUIDE

TO THE

ISLANDS EAST OF JAVA,

BY

LIEUT. H. D. A. SMITS, D.R.N.

HYDROGRAPHER TO THE COMMISSION FOR THE IMPROVEMENT OF THE EAST INDIA CHARTS.

1848.

SAILING DIRECTIONS, &c.

CHAPTER I.

North-East Coast of Java and Baly Strait.*

316. With the exception of the Strait of Allas, the Baly Strait is to be preferred to all the passages eastward of Java, as there is anchorage on both sides of the Narrows, which may be generally passed in a single tide. Another advantage of Baly Strait is, that ships bound to Europe during the western monsoon, are not so much liable to fall in with the coast of New Holland as when passing through any of the other eastern passages. *Strait of Baly.*

317. From February to September southerly winds prevail in Baly Strait, and during the other months baffling westerly winds, succeeded by calms and heavy squalls. Lieut. J. A. G. Rietveld, of H.N.M. schooner Krokodil, stationed on the N.E. coast of Java during the eastern monsoon 1842, experienced fresh breezes from S.S.W. to S.W. to the eastward of Cape Sedano, while steady E. and E.N.E. winds, succeeded by land-breezes from S. to S.S.W., were observed to the westward of the same cape; from July to November the S.W. winds to the northward of the strait blew rather strong, while at the same time fresh northerly breezes, varying between N.W. and N.E., prevailed to the westward of the cape. This change of the winds took place always immediately to the eastward of Cape Sedano, or when the strait opened; but past the strait, or when approaching the coast of Baly, the wind diminished in force, and veered gradually to S.E. Mount Goendol seems to be the limit of the S.W. winds, or of the influence of the strait in rendering the winds unsteady and variable. The southern part of the strait being much wider the wind is not so strong there, and near the shore of Baly the regular land breeze usually occurs. *Winds.*

* *See* Charts of Java Island, and of Islands east of Java.

Tides.

318. The currents or tides run through the Narrows with great velocity, some say 6 knots, and cause great ripplings, eddies, and a boisterous sea, particularly near the Baly shore during the eastern monsoon, when the S.S.W. winds blow so strongly that it is often impossible to manœuvre a ship. The flood runs to the northward and the ebb to the southward, and at full and change of the moon it is high water there between 12 and 1 o'clock. About quadrature of the moon, and particularly near the last quarter, the tides are very irregular; they change first on the Java side of the strait, and only $1\frac{3}{4}$ or 2 hours later on the Baly shore. During the eastern monsoon the flood is often found only near the Java shore, and even there not to the northward of Batoe Dodol, but during the western monsoon the northerly currents prevail: a tide lasts often for 7 or 8 hours.

Reefs of Tiottek.

319. The pirates often take shelter inside of the reefs of Tiottek, which stretch parallel to the shore between the points of Tiottek and Loemoet; they consist of 4 large reefs above water and some other shoal patches. There are passages for proas between each of the reefs, but those between the three westernmost are the widest, and lead to the anchorages of Laboean Gattal and Laboean Gollek, near which there is a watering-place. The pirates often enter the cove of Segrana more to the eastward, the narrow entrance of which is nearly closed by the sandbank projecting from Loemoet Point, and by the reef of Segrana Point; at high tide only there is space for proas to pull inside. The cove is large enough to contain a good number of proas, and as it extends to the eastward, the entrance only can be seen from seaward.

At low water the reefs of Tiottek are so high that few ships can fire at the proas lying inside of the reefs. On the north side of the westernmost reefs are soundings of 20 to 17 fathoms, but near the other sheltering places on the N.E. and E. coast of Java there is no anchorage for sailing ships.

Tiottek Road.

320. The best passage to enter between the shore and the reef is to the westward of the latter, close to Tiottek Point, from which a reef runs to the north-eastward partly covered. It is difficult to distinguish the road of Tiottek, as the village is a mile inland; the only landmark is a dead tree with two branches near the E. side of the river. The anchorage is to the westward of the point and of the river, the dead tree

bearing S.E. b. S. or S.E., Tianker Point N.W. b. W., and Loemoet Point E. b. S. in 8 or 10 fathoms. The river water is good for use; but boats cannot enter it unless at high tide. Fire-wood and venison are here in abundance.

321. Loemoet Point bears E.S.E. $\frac{1}{4}$ E. nearly, from Tianker Point, and has a broad reef projecting to the eastward, which forms Loemoet Road. The pirates occasionally take shelter in this cove, which stretches south-westward; its entrance is narrow, and may be known by a large stone in one with Sedano when bearing S. $\frac{3}{4}$ E. *Loemoet Point.*

There is anchorage for proas near Merak Point and at Batak; the first is open, but at the latter they are screened by a reef, and may lie unperceived, unless by vessels close in shore.

322. Cape Sedano is in 7° 49′ 12″ S., and 114° 32′ 30″ E.; it is rocky and steep, and the middle one of three points near each other. The Tafelberg, or Mount Sedano, bears W.S.W. $\frac{1}{2}$ W. nearly from Cape Sedano, and N.N.E. $\frac{3}{4}$ E. from Mount Idjing. *Cape Sedano.*

The anchorages of Tinjang, Toea, and Assam, to the southward of Sedano, are much frequented by the pirates; they are formed by detached reefs, and have only single entrances and little space inside, but at Katjang a large number of proas may lie concealed, and may escape either to the northward or southward.

323. Meinders Droogte in 7° 41′ 50″ S. and 114° 30′ 45″ E., is a coral bank of nearly a mile from N.E. to S.W., but not 2 cables' lengths broad. There is a basin on the S.E. part, and more to the eastward a small elevation, which appears at a distance to be the trunk of a dead tree, visible at 3 or 4 miles from the deck, and at 4 or 5 miles from the mast head. A beacon of brickwork, about 60 feet high, is to be erected on this rock. *Meinders Droogte.*

There is a smaller basin on the N.E. side, and the bank is surrounded by a reef, some points of which are visible above water to the north and north-eastward. Proas cannot enter the basins, but they anchor sometimes on the N.W. and W.N.W. edges of the reef. The centre of Meinders Droogte bears N.N.E. from Mount Sedano, E. $\frac{3}{4}$ N. from Mount Ringit, and N. $\frac{3}{4}$ W. from the easternmost point of Java. Ships passing between Java and these rocks ought not to approach close their S. and S.W. sides, on account of the following reefs:—

A reef extending E.N.E. half a mile, with only 2 fathoms water, bearing about a mile W.N.W. from Meinders Droogte, with no soundings less than 25 fathoms between them. Mount Sedano bears from it S. b. W. $\frac{1}{2}$ W.

From the outer edge of the reef, which surrounds Meinders Droogte in soundings of 10 fathoms, the dry part bore N.E. $\frac{1}{3}$ N. one mile, and the eastern extremity of Java (the point to the eastward of Cape Sedano), S. b. E. $\frac{1}{4}$ E.

A reef with 7 fathoms, with Meinders Droogte bearing about E. b. S., and the eastern extremity of Java, S. b. E. $\frac{1}{2}$ E.

A reef, with soundings of 7, 8, and 9 fathoms, and close to it 50 fathoms, with Meinders Droogte bearing N.E. b. E. $\frac{1}{2}$ E., and the E. extremity of Java S. b. E. $\frac{1}{2}$ E.; on all these reefs there is light-green coloured water.

Lieut. Rietveld, D.R.N., examined also the under-mentioned dangers along the E. coast of Java:—

A bank, covered with only 3 feet water, about a mile off shore, Mount Sedano bearing W.N.W. $\frac{3}{4}$ W., Mount Idjing S.W. and Tyandibang Point, with some trees on it, S. b. W. $\frac{1}{2}$ W. It will be avoided by keeping a coral bank, which lies a little to the southward of Tyandibang Point in sight, or open of the point.

This dry coral bank lies with Mount Idjing S.W. $\frac{1}{2}$ W., Mount Sedano N.W. b. W., and Tyandibang Point S.b.W. $\frac{3}{4}$ W.

The 2 fathoms bank is the north-easternmost danger, and is known by its discoloured water. Mount Sedano bears N.W. $\frac{1}{2}$ N.; Mount Idjing, S.W. b. W. $\frac{1}{4}$ W.; and Tyandibang Point, north from the shoal.

Captain F. Fokkens, commanding a Dutch merchant ship, was informed in 1836, by the pilot at Banjoewangie, that the 2 fathoms bank lies S.b.E. of Cape Sedano, and N. b. E. $\frac{1}{2}$ E. of Gilboan or Duiven Island, and about 3 miles off shore; it consists of five rocks close together, with only 6$\frac{1}{2}$ feet water over them. The said officer did not discover any danger to the eastward of the shoal which he had examined, and he was informed by a person who is well acquainted with the place, that there are no dangers farther to the eastward. It will be, however, prudent not to bring Gilboan Island to the southward of S.S.W.

There is anchorage in 30, 20, and 16 fathoms between the 2 fathoms shoal and the dry coral bank near Tyandibang Point

but it is not advisable to anchor there, unless in the beginning of the monsoon in case of calms.

There are two reefs to the south-westward of the 2 fathoms shoal; they bear about N. and S. from each other, and on the southernmost, in soundings of 5 fathoms, Mount Sedano was found to bear N.N.W.$\frac{1}{2}$W. Another rock, close to which 19 fathoms were found, lies with Mount Idjing bearing S.W.b.W$\frac{3}{4}$W., Mount Sedano N.N.W. $\frac{1}{2}$ W., and Tyandibang Point N. b. E. From another shoal, to the southward of the former, Mount Idjing bears W.S.W.$\frac{1}{2}$ W., Mount Sedano N.N.W. $\frac{1}{4}$ W., Tyandibang Point N. b. E., and Gilboan Island S.S.E. $\frac{1}{2}$ E. All these dangers have also light-green discoloured water.

Gilboan, or Duiven Island.

324. Gilboan, or Duiven Island, is small, and surrounded by a reef, which projects to the N. and S.E. of the island, and bears E. $\frac{3}{4}$ N. from Mount Idjing, and S.S.E. $\frac{1}{4}$ E. from Mount Sedano. It is dangerous to approach, as the current sets strongly towards it, so that vessels can only be saved from driving upon it during a calm by their anchors holding agaainst the reef in 60 fathoms depth. Piratical proas often lie in wait on the N. side of the reef for vessels coming out of Baly Strait. There are soundings in 40 and 20 fathoms between Gilboan and Java. The passage to the eastward of this island is preferable, as there are dangers to the westward, but in light and favourable breezes the western branch may be adopted, there being anchorage N.N.W. from the island in 40 fathoms; or, by keeping a good look-out for the reefs, in 20 fathoms closer in shore. When going out by the western passage, if overtaken by the contrary stream before reaching the northern anchorage, vessels are better able to fetch the anchorage to the southward of Dodol.

Baly Narrows.

325. Cape Passier, the N.W. point of Baly, forms the narrowest part of the Strait, which is here only 1$\frac{1}{2}$ miles wide. A reef projects about half a mile from Cape Passier, but the Java shore is steep-to, and may be approached without fear.

Anchorages.

326. The first anchorage is in the bight to the southward of the first point following after Batoe Dodol (which place may be known by a bridge over a creek, with a guardhouse near it), in 18, 12, and 10 fathoms, and in the eddy. There is also anchorage, but closer in shore, in the small bays to the southward of this, as far as the high tree on the Java shore, but it

is difficult to reach them with light winds if the vessel is not near the shore.

Deptford Shoal. 327. The dangers of Baly Strait begin when you approach the high tree on Java. The Deptford Shoal stretches here along the shore, being a reef of rocks with unequal soundings, but marked by two buoys. The one near the northern end lies in 6 feet water, the flagstaff of Fort Utrecht* bearing S.W. b. S., Pakkem Point in one with the western foot of Mount Ikan S. $\frac{1}{2}$ E., the high tree N. $\frac{3}{4}$ W., and the southern buoy S. b. W. westerly.

From the buoy near the southern end the flagstaff of the fort bears S.W., the high tree N. $\frac{3}{4}$ E., Mount Idjing N.W. $\frac{3}{4}$ N., and Pakkem Point S. $\frac{1}{4}$ E. nearly.

There are soundings from 3 to 6 fathoms rocky bottom between the buoys, and a great swell, and often breakers, upon the reef. The channel inside of the reef is much frequented by proas; it is a narrow passage, but with soundings of 6 and 7 fathoms.

Three Fathoms Shoal. 328. Lieut. J. A. van Ommen, D.R.N., surveyed, in 1846, a coral patch with large stones on the shoalest part, which is about 55 yards in diameter. The least depth on it is 3 fathoms at low water, with 5 to 8 fathoms all round, and increases suddenly to 12 and 19 fathoms. From the centre of the rock in $3\frac{1}{2}$ fathoms water the southern buoy at Deptford Shoal bears W. $\frac{1}{2}$ S., the high tree N. $\frac{3}{4}$ W., and the flagstaff of Fort Utrecht S.W. b. W. $\frac{3}{4}$ W.

Vessels coming from the northward, and bound to Banjoewangie during the eastern monsoon, are sometimes obliged to pass this rock at low water, and as there is often a great swell, it is considered very dangerous; but by keeping Mount Ikan about a ship's length open to the eastward of Pakkem Point they will pass to the westward of the rock. It is, however, better to pass to the eastward by hauling over, until the land to the southward of Pakkem Point is in sight, that being a more sure mark. When the houses of Soeka Radja, a village in the mountains to the westward of Banjoewangie, are seen to the south or northward of a high tree near the beach, you are

* There is another flagstaff, or telegraph, standing on a hill to the southeastward of the fort.—*See* Note to Art. 213.

to the north or southward of the danger, as from the centre of the rock those houses are seen in one with the tree.

Groot and Kaiman Rocks.

329. Farther southward lies the Groot Rock, which carries 2 fathoms water, and which is marked by a buoy; from this buoy the pier at Banjoewangie is seen in one with Fort Utrecht W.N.W., the high tree N., and Mount Idjing N.W. ½ N. Inside of this rock lies another called the Kaiman, with 2 fathoms water also, which was discovered by H.N.M. schooner Krokodil, the fort bearing W. b. N., the high tree N. ½ E., and Pakkem Point S. ½ W. Between the rocks there are soundings in 12 and 13 fathoms, and between the latter and the shore in 9 and 7 fathoms.

Buoys.

The three buoys are of iron, and painted red and white; it happens often that their chains are broken by the heavy swell.

Banjoewangie Road.

330. The road of Banjoewangie is limited by the last-mentioned reefs. There is very safe anchorage there during the western monsoon, in from 12 to 8 fathoms, when ships should moor N. and S., and they may then take their cargoes on board without the least difficulty. But during the eastern monsoon the S. and S.E. winds blow strongly in the afternoon, and often in the morning too, and cause a great surf on the shore, through which only very small proas can pass.

The river cannot be entered unless at high water, and then the surf is generally most high, which makes it difficult to water there, as the boats can fill only once a day, and are often obliged to remain in the river during the night. The water is very good. Mount Idjing bears from the pier N.W. ½ N., and Mount Ikan south-easterly.*

There is a patch of 5 and 6 fathoms on a hard bottom, to the eastward of which there are 9 and 10 fathoms, to the northward 7, 6, and 4 fathoms, and to the southward 8 and 9 fathoms. The patch bears E. ½ N. from the fort, and N. from Pakkem Point.

To enter the roads from the northward, keep the land immediately to the southward of Pakkem Point in view, and do not approach the shore in less than 15 fathoms before the fort bears W., nor bring the house on the pier in one with the fort, on

* These bearings have been given, as the observations for latitude cannot be trusted, the horizon in the meridian being limited by the land.

account of the Groot Rock; this will lead to the eastward of all the dangers. Passing between the 3 fathoms shoal and the Deptford Rocks, keep Pakkem Point well open of the foot of Mount Ikan, but it is not required to keep in sight the land to the southward of Pakkem Point.

When the fort is brought to bear W. steer direct for it till in 12, 20, or 8 fathoms clear bottom, where you may bring up; but some attention is required on account of the streams of tide while nearing the shore, as they run sometimes in a contrary direction to those in the middle of the strait.

To avoid the rocks to the southward keep the pier so as to view it always on its N. side. The best anchorage is with the fort bearing W., the high tree N. $\frac{1}{2}$ E., and Pakkem Point S.

Pilots. A vessel desiring to have a pilot in the strait ought to give due notice beforehand to the pilot at Banjoewangie, of the place from and the date on which she intends to sail. He then will take care to have one ready on her making the signal, near the Java shore at anchor on the reef opposite Gilboan Island. During the eastern monsoon the pilots seldom cruise, as only a few vessels then require their assistance.

Departing from Banjoewangie bound to the southward, do not approach too near to Pakkem Point, as a reef projects from it about 3 miles.

Pakkem Reef. 331. The Dutch merchant ship Bato, Captain J. Keyzer, left the road of Banjoewangie, February 8, 1843, and worked with short tacks to the southward; at 11 A.M., after tacking in-shore towards Java, sounded in 35, then 25 fathoms, coral bottom, and immediately afterwards 9 fathoms hard rocky bottom, let go the anchor, and had only 7 fathoms near the ship. The boat had 6 fathoms three ships' lengths to the N. $\frac{1}{2}$ W.; she sounded all round at the distance of a cable's length in 10 and 11 fathoms, and found another patch of 6 fathoms, bearing S.S.E. from the ship. In the direction of the nearest land N.W. there were 10 to 15 fathoms coral bottom, and then black sand about a mile off-shore. From the ship the flagstaff of Banjoewangie bore N.N.W. $\frac{1}{2}$ W., a village to the southward of Pakkem Point S.W. b. W. $\frac{1}{4}$ W., Mount Ikan S. $\frac{1}{2}$ W., the sharpest peak opposite to Banjoewangie on Baly N.E. $\frac{3}{4}$ E., the extreme northern point of Baly N. b. E., Pakkem Point N.W. b. N. 2 miles, Mount Idjing N.W. $\frac{3}{4}$ N., and the

southernmost high mountain of Java W.N.W. The tide changed at 7 P.M., it being half ebb when the ship came to. The next day, when the village bore W. $\frac{1}{2}$ N., distant 2 miles, sounded in 11 fathoms black sand, and the ship came to in 13 fathoms, the same bottom, Mount Ikan bearing S. b. W., and the village N.W. b. W. $\frac{1}{2}$ W.

Captain M'Kenzie, commander of an English merchant ship, gives the following bearings for the eastern edge of this reef: Mount Ikan S. $\frac{1}{2}$ W., Pakkem Point in one with Banjoewangie N. $\frac{1}{2}$ W., distant 5 miles, a village S.W. $\frac{1}{2}$ W., and the high tree in one with the highest top of Mount Sedano. And to avoid the reef of Pakkem Point do not bring Mount Ikan to bear to the southward of S. b. W., nor the high tree to the eastward of the centre of Mount Sedano.

332. Mount Ikan, in 8° 27′ 45″ S., and 114° 26′ 52″ E., on a point of Java projecting to the northward, forms a very safe bay, sheltered on the eastern side by this hill, which is about 400 or 500 feet high, and on the N. side by the projecting land of Java, so that the water is smooth in both the monsoons. The southern shore is covered with thick forests of *jattee* trees. There is anchorage from the entrance to 3 or 4 miles inwards, on the eastern side of the bay, in depths from 12 fathoms, regularly decreasing to 3 fathoms, the bottom coral sand, but not farther to the westward of the Mount Ikan shore than half a mile or a mile. The beach on the eastern side is lined with a small reef, consisting of coral and mud, and the W. and S. shores by muddy flats. H.N.M. steamer Vesuvius observed the rise of the tide to be 7 feet, September 19, 1846, one day before full moon. *Pampang Bay.*

333. The S.E. angle of Java is an isthmus, of which the eastern point, called Cape Slokko, lies in 8° 42′ S., and about 114° 40′ E., and the S. point in 8° 47′ S., and 114° 30′ 35″ E. Heavy breakers project a mile from these points; and close to the edge of the breakers will generally be found soundings in 30 to 50 fathoms, and there is no bottom with 100 fathoms; so that there is no safe anchorage near the Java shore to the southward of Mount Ikan. In the middle of the strait, however, there is a 5-fathoms bank on which ships may anchor in case of calm and contrary tide. It is about 4 miles in extent, with soundings from 5 to 24 fathoms, black sand, mixed with stones *Cape Slokko.*

Eefprins Bank.

and shells, Mount Ikan bearing N.W. b. W. $\frac{1}{2}$ W., and Cape Slokko S. b. W. $\frac{1}{2}$ W.

Reefs and sheltering places on the N.W. coast of Baly.

334. Ships during the eastern monsoon, working towards the Strait of Baly, falling in with S.S.W. and S.W. winds to the eastward of Cape Sedano, must stretch over to Baly, and make the land about Herten Island, or Mount Goendol, or sometimes more to the eastward when the current sets out to the northward.

335. Mount Goendol * is a small peaked and bare hill, which may be known by its yellow aspect, standing on a low land-tongue projecting to the northward, so as to form a safe sheltering-place, and at the same time a good look-out for the pirates. The land-tongue is surrounded by a reef, and has on the western side a small bight with a sandy beach, to which ships may approach very close, and will find anchorage in from 20 to 14 fathoms; there is another small bight on the eastern side also, with a sandy beach. To the northward of Mount Goendol there is an extensive reef of an oval shape, with 20 fathoms near its northern edge, then 9, 4, 3, 2, 3, and 7 fathoms rocky and sandy bottom, and 24 fathoms to the S.S.-westward, which enables ships to pass (having a fair wind) between the reef and the shore, so as to overtake the pirates in their sheltering-place on the E. side. From the reef, Mount Goendol bears S.S.W., Plakkie Point W. northerly, and Mount Sandan W. b. N. nearly. Another small reef, with 4 and 6 fathoms, and 18 fathoms on its northern edge, bears N.W. b. W. from Mount Goendol, distant $2\frac{1}{2}$ miles.

Mount Sandan, about 5 miles to the westward of Mount Goendol, has a small sandy beach on the eastern side, sheltered by reefs, which make the approach so difficult as to be only practicable from the W.N.W.

There is a single rock carrying 7 and 9 fathoms, with Mount Goendol bearing S.E. b. E. $\frac{3}{4}$ E., Plakkie Point S.E. b. E. $\frac{1}{4}$ E.; and another more extensive reef stretching E.N.E. and W.S.W., with 4, 3, 2, $1\frac{3}{4}$, 4, and 7 fathoms on it, Mount Sandan bearing W. $\frac{3}{4}$ S., and the N. point of Minjangan or Herten Island W. b. N.

From the N.W. points of two other reefs, in soundings of $2\frac{3}{4}$ and 9 fathoms, Mount Sandan bears S.W. $\frac{3}{4}$ S., and the E. point of St. Nicolas Bay W. $\frac{3}{4}$ N. The innermost reef is partly dry.

* The coast hereabout is uninhabited, and only now and then visited by Balinese fisher or huntsmen, when the pirates have left the coast.

From the E. point of another extensive reef which was examined, in $2\frac{3}{4}$ fathoms, Mount Sandan bore S. $\frac{1}{4}$ E., and the E. point of St. Nicolas Bay W. $\frac{1}{2}$ N.; from its centre in $1\frac{3}{4}$ fathoms, Mount Sandan bore S. b. E. $\frac{1}{4}$ E., and the E. point of St. Nicolas Bay W. $\frac{1}{4}$ N.; and from its W. point, Mount Sandan bore S. b. E. $\frac{3}{4}$ E., and the E. point of St. Nicolas Bay W. $\frac{1}{4}$ N.

From the centre of a smaller reef, south-westward of the last mentioned, in 3 fathoms, Mount Sandan was found to bear S.E. b. S., and Mount Goendol E.S.E. Between these shoals there are several passages for proas; and the reefs may be discerned by the light-green colour of the water.

The low point to the westward of Mount Sandan has a large reef, running off W.N.W. and W. b. N. along the shore, inside of which numbers of piratical proas may lie concealed; and there are many passages for proas between the rocks, but those along the east point of St. Nicolas Bay, and close to the low point, are the best.

336. Banjoewedan Bay is nearly closed by a reef, and turns immediately to the eastward; proas may lie here hidden from the sea view. *Banjoewedan Bay.*

337. The northern part of St. Nicolas Bay appears to be free from dangers, but it has no convenient soundings; in the southern part two dry reefs are seen, and it is probable that there exist other dangers thereabout. *St. Nicolas Bay.*

338. Minjangan or Herten Island, contiguous to the Baly shore, is surrounded by a reef, which projects far to the eastward and westward. There is a dry patch of coral and sand off its western end, and at low water the whole reef is often visible. In the passage between Minjangan and Baly soundings may be had in 12, 15, and 20 fathoms; but there is also a patch of only 3 fathoms close in-shore of Baly. Ships may shelter there during the western monsoon. *Herten Island.*

339. A reef with white discoloured water projects about half a mile from Cape Passier, the N.W. point of Baly, on account of which ships in the Narrows should keep on the Java shore. *Cape Passier.*

340. Manok Bay lies about 4 miles to the southward of Cape Passier; the entrance is barely a ship's length wide, and inside of the bay there are three small islands, surrounded by a flat of mud and sand. Southward of the islands are depths of 9 fathoms; to the northward and in the entrance of the bay 4 *Manok Bay.*

fathoms; the northern shore is lined by a bank, but the southern shore is quite clear. To the eastward of the islands there are only 2 fathoms, and the cove near the watering-place has only water enough for very small proas; fresh water is very scarce. The tides run with great velocity round these islands, and the perpendicular rise of the water is from 8 to 10 feet.

S.W. coast of Baly.

341. A large river, which is said to be navigable for small schooners, falls into the sea near Jembrana Point; from whence the coast stretches about E. and S.E., lined by a reef with a great surf upon it, which, however, is the only danger near this coast, and in calm weather ships may anchor along it in from 12 to 18 fathoms. This facility of anchoring, together with the pretty regular land breezes, make it easy to work along this shore in the eastern monsoon.

Baly Badong.

342. The southern part of Baly, called Tafel Hoek, is a high isthmus joined by a land-tongue to the body of the island; the land-tongue, upon which there are two villages, Kotta on the north side, and Toeban to the south-eastward, is barely a mile broad. On both sides of it there are anchoring roads, of which the westernmost is used during the eastern monsoon, and the other during the opposite monsoon.

Badong Bay.

The western road, Badong Bay, or Panti-Barat, is not, however quite safe during the eastern monsoon, on account of the heavy rollers which enter about full and change of the moon, nor after very blowing weather; these rollers often cause the chains to part, or oblige the vessels to leave the road, and therefore they ought never to moor there.

Coming from the westward, a high tree, standing near Toeban, may be seen long before the low land can be discerned, and soon afterwards the flagstaff and a small house, the lower part of which is whitewashed. The shore is covered with heavy breakers, which project a long way opposite to the flagstaff. The anchorage is unsafe on account of the heavy swell which comes round Tafel Hoek, very far from the village of Kotta, and the landing is dangerous. Westward of the reefs are soundings in 12 and 15 fathoms, and close to their edge 6 and 7 fathoms. There is a bar W. $\frac{1}{2}$ N. from the flagstaff, with $2\frac{3}{4}$ fathoms on it, according to Lieut. J. Van Gogh's chart, but, according to Capt. M'Kenzie, it has only $1\frac{3}{4}$ fathoms at low spring-tide; there remains a passage with depths of 3 and $3\frac{1}{2}$ fathoms between the bar and

the reef. The bar diminishes greatly the swell of the sea, and the anchorage inside is safe, although lying in the midst of breakers. It happens, however, that vessels lying too near the bar, or when the breakers on it are very high, are sometimes obliged to leave this anchorage, and run for shelter to the northward of the bar, where the breakers do not reach. H.N.M. schooner Krokodil anchored in 6 fathoms, with the flagstaff S. b. E. $\frac{3}{4}$ E., Bockit Point S.W. $\frac{3}{4}$ S., a high tree to the northward of the flagstaff E.S.E., the N.W. point of the bay N.W. $\frac{3}{4}$ W., and another point S. $\frac{1}{2}$ W.; but it is safer to lie closer in-shore, and with not less than 40 or 60 fathoms of cable, as the swell is always high; there is no danger of breaking the sheer, as the land-breeze blows fresh from the S.E., and the N.W. winds are always light. By keeping the high tree, which stands to the northward of the flagstaff, between E.S.E. and S.E. b. E., you may work in-shore till in $5\frac{1}{2}$ fathoms; but, if not accustomed to the place, it is prudent to anchor in 8 or 10 fathoms, with the flagstaff bearing S.E. b. S., and to send for a pilot. Boats may steer to the shore half-way between the high tree and the flagstaff, and proceed between the breakers from the shore, and those on the reef opposite the flagstaff, where they come to their grapnel.

Tides.

343. It is high water at full and change of the moon at 11 o'clock, and the rise of tide amounts sometimes to 8 or 10 feet. The export of rice to China and Singapore is considerable, and supplies are to be got in abundance, also cattle and poultry; the watering place is near the flagstaff.

Working to the southward in Eastern monsoon.

344. Ships bound from the Strait of Madura to Baly Strait during the eastern monsoon work between Java and Meinders Droogte, the dangers near the former being all above water; but to the west and south-westward of Meinders Droogte there is a reef extends about $1\frac{1}{2}$ miles, which may be known by light-green, discoloured water.

After rounding Cape Sedano, the wind will change to S.W. or S.S.W., which will enable them to fetch the Baly shore about Minjangan Island or Mount Goendol, from whence it is easy to work towards the strait. Should adverse tides or approaching night forbid an entrance to the strait, ships should keep under an easy sail. If the stream runs to the northward they will not be liable to approach the shore, and by keeping

Minjangan Island to the southward of S.S.E., and the high mountain of Idjing to the southward of W., they will avoid Gilboan Island and the dangers near the coast of Baly.

When the tide changes, work with short tacks between Minjangan and Gilboan Islands, and keep the Java shore on board, when in the Narrows, to avoid the reef off Cape Passier; the Java shore is preferable also, because the sea is not so boisterous there as near Baly. When the tide is going to change, search for anchorage in the bays to the southward of Dodol, the Java shore being safe to approach as far as the high tree.

When past the high tree, keep Mount Ikan well open with Pakkem Point, or, rather, stretch over to the eastward so far as to get in view the land to the southward of Pakkem Point, and do not borrow towards Java in less than 15 fathoms before Fort Utrecht bears west, for which they may then steer as before directed. When working to the southward of Banjoewangie, keep Mount Ikan to the westward of S. b. W., to avoid the reef off Pakkem Point.

The southernmost safe anchorage on the Java side of the strait is in Pampang Bay, nevertheless keep on the Java shore until near S.E. point, as the sea is usually smoother there than near Baly, and no tide perceptible. Having approached the S.E. point, stretch over to Baly, and work along that shore with the land and sea breezes, occasionally anchoring in from 12 to 18 fathoms.

In Western monsoon.

345. During the Western monsoon there are generally light southerly airs in the forenoon, and in the afternoon variable breezes from N. and N.N.W., with smooth water. Sometimes there are strong gales from N. or N.W., and now and then from S.W., but in either case it is easier to make southing during this than in the eastern monsoon; the many calms, however, make it often tedious to pass through the Narrows, and ships are then liable to be horsed on the reef off Cape Passier or between Gilboan and Java. The boats ought, therefore, to be kept in readiness to tow the ship, not only there, but also in the southern part of the strait, where vessels are always liable, during the continued calms, to be driven on the reefs which fringe every projecting point.

Working to the northward in

346. From September to October S.S.W. to S.S.E. and S.E. winds prevail to the northward of the limit of the trade-winds,

and they are strong from the S.E. in July, August, and September; a vessel should then, at leaving the S.E. trade, be nearly on the meridian of the strait through which she is to pass, and steer N. for it, or north-easterly, to counteract the westerly current which is then in its strength. *Eastern monsoon.*

The S.E. part of Java is pretty high, sloping down on both sides, and appearing at a distance like an island. Tafel Hoek also appears as an island, but it is higher and bolder, and may be known by two islets to the eastward, called Gebroeders. As the weather is generally hazy during the eastern monsoon, there is little chance of getting a view of the Baly Peak, and great attention is required not to mistake Pandita Island for Tafel Hoek, and the latter for the S.E. point of Java, as it has sometimes happened, but when the error is not very great the views of the land in the chart will prevent any mistake of the reckoning.

When abreast the S.E. point of Java, Mount Ikan will be seen bearing about N.W. and appearing like an island; shape the course between N.N.W. and N.W. for Banjoewangie, avoiding the reefs which project from the points of Java, and keep Pakkem Point at the distance of at least 4 miles, on account of its reef. Entering the road of Banjoewangie, bring the flagstaff to bear W., and steer for it on this bearing up to the anchorage.

If bound through the strait, keep Mount Ikan well open of Pakkem Point, or, rather, keep the land to the southward of this point in view until you are to the northward of the high tree, when it is advisable to keep nearest to Java, to be the sooner in anchorage if required, and to avoid the reef off Cape Passier. You may pass on either side of Gilboan Island at a moderate distance; the western passage is preferable in case of light winds, as there is anchorage to the N.N.W. of that island in 40 to 20 fathoms; great care is requisite in approaching the Java shore, on account of the several dangers near it; and should a contrary tide come before you reach the anchorage to the northward of the Narrows you must endeavour to reach the anchorage to the southward of Dodol. When nearing the 2 fathoms shoal it is prudent not to bring Gilboan Island to the southward of S.S.W. The N.E. part of Java may be approached within 2 miles.

During the Western monsoon.

347. From October to March, westerly winds, with easterly and south-easterly currents, prevail to the northward of the S.E. trade, which may be then treated with more freedom, making the land to the westward of the intended strait, and rounding the points at moderate distances. Strong northerly currents in the strait, and very smooth water, render it easy to make northing during the western monsoon.

CHAPTER II.

BALY ISLAND AND LOMBOK STRAIT.

348. MOUNT AGONG, or, as it is usually called, the Peak of Baly, is the highest point of the chain of mountains which terminates in the E. point of Baly ; its summit is in 8° 20′ S. and 115° 32′ E.*, and is often visible at the distance of 80 miles. The most remarkable summits of the chain are the four peaks of Mount Tabanan and the volcano Batoer, although the latter is not very high, the smoke issuing from its crater may be perceived at a great distance. *Agong, or Baly Peak.*

To the eastward of Sangsit the high mountains nearly reach the coast ; near Tianiar the chain is split by a deep ravine ; it then passes the village of Tiolik, and forms, under the name of Mount Seraja, the bold eastern extremity of Baly, sends out ridges towards Laboean Amok and Padang Cove, and slopes down to the southward in low, cultivated land. The coasts are steep-to on either side, though close in shore some anchorage may be found in considerable depths.

349. The road of Tebonkos, in 8° 7′ S. and 115° 2′ E., according to Capt. J. P. Machielsen, D.R.N., is the best on the N. coast *Tebonkos.*

* According to		° ′ ″		° ′ ″
H.N.M. frigate Boreas	1838, in	8 21 50	S.	
„ „ Maas	1839,	- -		115 33 52	E.
„ sloop Panter	1839,	- -		115 28 45	„
„ „ Meermin	1839,	- -		115 32 45	„
„ „ „	1840,	- -		115 28 30	„
„ „ „	1841,	- -		115 28 3	„
„ steamer Hecla	1843,	8 17 40	„	115 34 0	„
„ sloop Postillon	1843,	- -		115 33 30	„
„ schooner Zephyr	1843,	8 17 0	„	—	
Lieut. J. R. Cambier, D.R.N.	1843,	8 17 0	„	—	
H.N.M. sloop Zwaluw	1845,	- -		115 35 54	„
„ steamer Bromo	1845,	- -		115 32 0	„
„ „ „	1846,	8 20 0	„	—	
Lieut. J. Van Gogh, D.R.N.	1847,	8 21 30	„	115 33 40	„
„ J. F. Sandifort, D.R.N.	1847,	8 20 0	„	115 34 25	„
H.N.M. steamer Vesuvius	1847,	- -		115 30 0	„

of this island, being sheltered from N.W. and N. winds by a dry coral reef, which fronts the shore at the distance of 380 yards, and inside of which first-rate ships might lie in safety, but they should moor W.S.W. and E.N.E. in mid-channel, so that vessels may swing clear of the shoal water on both sides. Between Antoran Point to the eastward and Cape Koanjer to the westward, many dangerous reefs project to a considerable distance from the land.

Bound to Tebonkos, keep the reef, which may be known by a small house and some trees on it, bearing S.; round it very closely on either side, and moor to the southward of it in 13 or 14 fathoms. Ships making a short stay should anchor in 20 or 22 fathoms to the eastward of the reef, distant $1\frac{1}{2}$ or 2 cables' lengths from its edge, where they need not moor, and from whence it is easy to get underway. The reef will be perceived at a distance of 5 or 6 cables' lengths, as the water on it is much discoloured.

Tides. The ebb runs westward, and the flood eastward; generally only one flood and one ebb tide are observed in 24 hours; at full and change of the moon it is high water at 5 o'clock, and the rise of the tide is 6 or 7 feet at the springs.

Beliling Road. 350. There is anchorage all along the shore between Beliling and Sangsit Points, at $1\frac{1}{2}$ or 2 cables' lengths off shore, on a steep bottom of coral and sand. During the western monsoon the anchorage opposite to the fort is considered unsafe; it is better to lie then inside of the reef to the westward of Sangsit Point, which is about 4 cables' lengths distant from the latter, being steep-to, and having patches of only $1\frac{1}{4}$ fathoms. At Beliling Point there is a steep reef, of which several rocks are visible above water. With the river bearing S., you may stand in for the anchorage without fear. The river will be known by the proas lying inside; its entrance is in 8° 5′ 30″ S. and 115° 8′ 45″ E.

Other anchorages. 351. The anchorages on the N.E. coast of Baly are still more unsafe, closer to the shore and unsheltered. H.N.M. steamer Bromo anchored in 33 fathoms near the village of Koeboe, Baly Peak bearing S. $\frac{1}{2}$ W., and the S.E. point of the bight S.E. b. E., and afterwards near Tiolik, the extreme points of the land bearing N.W. $\frac{3}{4}$ N., and E. $\frac{3}{4}$ S., and Baly Peak W. $\frac{1}{2}$ S.

There is anchorage near the village of Oedjong in 20 fathoms, 3 cables' lengths off shore, the village and the peak bearing N.W. $\frac{1}{4}$ W., the N.E. point of the land N.E. b. E., the islet of Assam S.S.W. $\frac{1}{2}$ W., and the E. point of Pandita Island S. $\frac{1}{4}$ W. In the end of December the boats of the Bromo found it impossible to land here on account of the swell, which broke heavily on the rocky shore notwithstanding it had been very calm weather for many days. The depths decrease to 10 fathoms a cable's length off shore; and there is a small reef about 4 cables' lengths to the southward of the village, projecting half a cable's length from the shore.

352. The passage inside of Groen Island is safe; H.N.M. steamers Bromo and Vesuvius went through it with soundings of 9, 7, 6, 12, and 16 fathoms. *Groen Island.*

353. Amok Bay, or Laboean Amok, is very safe during the western monsoon, the bottom being not so steep, and there is little surf on the sandy beach; the soundings decrease regularly from 35 to 10 fathoms at 2 cables' lengths from the beach. H.N.M. steamer Bromo anchored in 11$\frac{1}{2}$ fathoms half a mile off shore, Agong Peak bearing N. $\frac{1}{3}$ W., the points of the bay S. $\frac{1}{4}$ W. and E. $\frac{1}{2}$ S., Groen Island E.S.E. $\frac{3}{4}$ E., and the N.E. point of Pandita Island S.S.E. $\frac{1}{4}$ E. *Amok Bay.*

354. Padang Cove is separated from Amok Bay by Castor Point, and is nearly filled up with reefs, between which there remains only a small gullet about 82 feet broad, where small craft may find anchorage in 2$\frac{1}{2}$ or 3 fathoms. The cove is safe to approach, having soundings in 30 fathoms, at a distance of 2 cables' lengths, and in 20 fathoms, 2 or 3 ships' lengths outside the entrance. *Padang Cove.*

Castor Point, between the cove and Laboean Amok, may be known by a temple standing on it; the village Padang is seen in the back ground, between tufts of trees; the valley around the cove is about 160 yards broad, and surrounded by a ridge of steep hills, elevated 500 or 600 feet, which are separated by another valley from the high mountains.

The S.E. coast of Baly is safe to approach, but there are no soundings near it, unless close in shore.

355. The anchorage near Lebe is said to be safe in both monsoons, and ships may anchor there in from 15 to 8 fathoms, abreast of the sandy beach. H.N.M. steamer Vesuvius lay with *Lebe Road.*

the village bearing N.W., Baly Peak N.N.E. $\frac{3}{4}$ E., and Pandita Island from S.S.E. $\frac{1}{4}$ E., to S.E. b. E. $\frac{1}{2}$ E.

Panti-Timor. 356. Panti-Timor, or the eastern road of Baly Badong, is safe during the western monsoon; ships may moor inside of the reefs along the shore. The entrance between the reefs, however, is very narrow and intricate, and as the tides set with great velocity over the points of the reefs, it is dangerous to haul a ship inside.

From Benoa Point, on which a flagstaff is standing, a reef runs south-eastward, the outer edge of which bears about N. from the Brothers, two small islands lying close to the shore. The low island of Serangan, extending between the points of the bay, is lined by a broad reef, which is steep-to, and has a sharp point projecting to the southward. Schooners and small craft may haul inside through the channel between those reefs. Coming from the southward, pass along the Brothers at the distance of half a mile or a mile, steer N. or N. $\frac{1}{2}$ E., not approaching the southern reef in less than 9 fathoms, until Benoa Point bears W. northerly, and come to there in 8 to 10 fathoms, the Brothers bearing S. At full and change it is high water about 11 o'clock.

Pandita Island. 357. The Pandita group, situated between 8° 39′ and 8° 48′ S., and 115° 26′ and 115° 40′ E., appears from the southward as high table land, with a small peak on its E. end. It is dangerous to approach these islands, as the tides run there with tremendous rapidity. The Cirencester, during a calm, was horsed between Great Pandita and the islands close to the W. side of it, by a rapid current or tide during the night. The channel was so narrow, they thought the ship would touch against the steep shores on either side, which appeared over the tops of the masts, although no soundings could be obtained. She was swept through this critical gut by the strong current or tide, fortunately without damage.

The channels on both sides of the group are safe, but the western is to be preferred, as the eddies are not so violent there, and there being anchorage near the Baly shore. There is also a patch, with soundings of 30 fathoms, on which ships have stopped a tide in fine weather, Kassoemba (which may be known by large storehouses on the beach) bearing N.W.

358. Noord Island, or Trawangan, is the highest of a group of three islands near the N.W. point of Lombok, in 8° 18′ 30″ S., and 116° 4′ E., and from its N. point Lombok peak bears E. b. S. H.N.M. steamer Hecla anchored in 15 fathoms, with this island bearing from N. to N.W. b. N., Rombeh Point S. b. W., Mount Agong, or the Peak of Baly, W. northerly, and a river S.E. b. E. *Lombok Strait, Noord Island.*

359. The large bay of Ampanam is a safe road during the eastern monsoon, and there is a cove in the S.E. part of it, sheltered from all winds. A group of islands and reefs fronts the southern shore of the bay; and there is a bank of coral and sand, with soundings from 10 to 25 fathoms, on which the Heroine lay at anchor during a fresh S.E. breeze, the first island to the northward of the W. point of Lombok bearing S. b. E. about 3 miles. There is also anchorage in 10 or 12 fathoms near a sandy beach, but very close in shore, a little to the southward of the N. point of the projecting S.W. land of Lombok. *Ampanam Bay.*

H.N.M. frigate Boreas, bound to Ampanam, June 1838, kept Baly Peak on the bearing of W.N.W.; she got soundings in 29 fathoms, when the N.westernmost land of Lombok bore N. ¼ W., regularly decreasing to 7½ fathoms, with the N.W. land bearing N. b. W., and then 13, 15, 18, 20, 14, and 10 fathoms, the same land bearing N. b. W. ¼ W. and 11, 17, 18, and 17 fathoms, when the N.W. point of the bay bore N. b. W. ½ W.; from thence the soundings decreased gradually towards the anchorage to 10 fathoms, over a sandy bottom, Baly Peak bearing W.N.W., the extremities of the bay N.N.W. and S.W. b. W., the flagstaff and Lombok Peak E.N.E., the river's mouth S.E. ¼ E.

The Boreas watered here, and filled daily 2,000 gallons; at high water boats can enter the river, but otherwise the casks must be carried across a neck of land. Cattle are cheap, and all kinds of provisions are to be had there. The mouth of the river cannot always be discerned at a distance, but it may be known by the huts along its banks.

According to Mr. King, there is a rocky patch, with only 2½ fathoms, to the N.westward of the flagstaff, probably the same on which, in 1811, the boats of H.B.M. ship Psyche had 3 fathoms, Lombok Peak bearing E. b. N., and the N. point of

the bay N. b. W. $\frac{1}{4}$ W. The boat of the Boreas sounded in $2\frac{1}{2}$ fathoms on a shoal S.W. of Karang Point, and near the shore, having 6 fathoms all round.

On leaving the road, the same ship kept Lombok Peak bearing E.N.E., and had 9 fathoms the least soundings.

H.N.M. frigate Triton entered the bay in December 1838, keeping the huts near the river between E. b. N. and E.N.E.; the soundings decreased rapidly from 27 to 5 fathoms, but afterwards increasing to 10 fathoms, clay bottom, the entrance of the river bearing S.E. b. E., and about a mile off shore. She left the bay steering W., and the least water through which she passed was 11 fathoms. With Rombeh Point bearing N., and the flagstaff E., the Hecla steered E.N.E. over not less than 9 fathoms; she left the roads steering W.S.W. in 8 fathoms.

Tides. The tides in the bay are seldom found to be strong; the rise of tide is from 5 to 7 feet, and it is high water at full and change of the moon about 8 o'clock.

Directions for the Bay of Ampanam. The best marks for Ampanam Bay are, the peak of Baly bearing W.N.W., Lombok Peak between E.N.E. and N.E. b. E., or the river bearing E. b. N.; but it is not safe to approach the shore, after having passed the ridge, in less than 10 fathoms, as in some parts the soundings decrease very rapidly from 7 to 3 fathoms. During the western monsoon (from November to April) ships ought to anchor 2 miles off shore, so as to be able to run for Laboean Tring, if need be. On appearance of bad weather the chains should be buoyed, and everything ready to slip.

Laboean Tring. 360. In running for Laboean Tring a southern course will about lead down the bay, but in blowing weather it is preferable to haul out S. b. W. $\frac{1}{2}$ W. at first, and when abreast of Karang Point, easily known by a little conical hill near it, and about $2\frac{1}{2}$ miles from Ampanam, steer S., or more easterly if required, as you approach the cove. The western side of the entrance to the cove is bluff and readily distinguished; the E. point is low and sandy, with bamboos and brushwood. Entering the cove, keep nearest to the eastern shore, as a reef runs off the other. A good mark is, to bring the low point about S. b. E., and run in with that bearing till a high bluff point on the E. side of the cove be seen. Haul round the E. point until it bears N.N.W. $\frac{1}{2}$ W., or N.W. b. N., and bring up in about 10 fathoms

mud and clay, 2 or not more than 3 cables' lengths from the beach; the water here will be quite smooth, although a great deal of swell may be in the entrance. A reef surrounds the island, which lies E.S.E. of this anchorage; of this be careful by bringing up close to the beach, which is so steep-to that 4 fathoms will be found over a boat's stern when she touches the ground forward, except near the eastern extreme point. There is also a good berth in the W. side of the cove close in shore in 6 or 7 fathoms mud, care being taken not to run beyond the small islet. There are three good wells near the huts on the eastern side of the cove; firewood and bamboos may be cut in plenty, but any other supplies, excepting plantains and cocoa-nuts, are scarce, and it is unhealthy during the north-western monsoon.

Winds and Currents.

361. During the E. monsoon strong winds from S.S.W. to S.E. prevail in the Strait of Lombok, and during the western monsoon N.W. winds; during the former the southerly currents are the strongest, and during the latter they run with more velocity to the northward.

Directions for the Strait of Lombok.

362. Entering Lombok Strait, with an adverse current during the eastern monsoon, most progress may be made by keeping the Baly side on board until the peak bears W. By stretching over then to Lombok, a ship will very likely fetch the road of Ampanam, especially if the Baly side of the strait be left early in the morning for the sake of the sea breeze from the southward. With a contrary current, it is difficult to get down on the Lombok side of the strait, and on the Baly side after the peak bears to the northward of W. The channels on both sides of Pandita Islands are safe, but the western one is to be preferred, as ships may anchor occasionally near Baly, and the riplings are not so strong there as to the eastward of these islands. The Minerva, Brunswick, and Chesterfield were from the 16th to the 30th January, 1794, beating through Lombok Strait to the southward, and the Planter was 21 days beating from Panti-Timor to Ampanam. Although the route through Lombok Strait is liable to great delay, it is often used by ships bound to China which pass St. Paul and Amsterdam Islands in the latter part of January or in the beginning of February; the passage through the Strait of Allas is, however, generally quicker. Care is then requisite not to fall to leeward of the intended strait. The high peaks of Baly and

Lombok may be seen in clear weather about 8 leagues to the southward of the straits, the latter one showing from this view two summits over the high western part of the island.

Bay on the S. coast of Lombok.

363. On the S. coast of Lombok there is a deep bay, with the peak of Lombok bearing N. $\frac{1}{2}$ E. from the entrance; the E. side is formed by high cliffs; 20 fathoms will be found between the heads, inside 15, and so on to 7 fathoms.

CHAPTER III.

The Island of Lombok and Allas Strait.

364. The island Lombok, also called Sassak or Seleparang, is high land. Its lofty peak, which stands in 8° 23′ 30″ S., and 116° 31′ E.,* is an extinguished volcano, and appears double when seen from the southward. *Lombok Peak.*

365. The N. coast is steep-to and without anchorage. In the old charts two dangers are laid down to the northward of the islands, which seem not to exist, as many ships have made a fruitless search for them. *North Coast.*

H.N.M. steamer Merapie sounded in 80 fathoms, coral bottom, half a mile off shore, with the peak bearing S.E. ½ E., Noord Island S.W. b. W. ½ W., and a village S.E. b. E.; and H.N.M. frigate Boreas coasted within 2 and 4 miles distance of part of the N. shore, where two villages were seen, the easternmost of which is in one with the peak S. ¾ E. The N. point of the island is a green point to the westward of those villages in 8° 11′ S., and the land thereabout has a fruitful appearance, and seems to be well peopled; a heavy swell and surf were observed on the beach, and proas were seen moored close to the surf. The frigate experienced a strong eddy at that distance from the shore.

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* Longitude of Lombok Peak according to—

		°	′	″	
Capt. Ashmore	- - -	1822,	116	29	0 E.
H.N.M. frigate Ajax	-	1834,	116	30	30 „
„ „ Boreas	-	1838,	116	31	28 „
„ „ Maas	-	1839,	116	33	45 „
„ sloop Meermin	-	1840,	116	31	50 „
„ steamer Phœnix		1843,	116	29	30 „
„ sloop Arend	-	1843,	116	30	0 „
„ „ Postillon	-	1843,	116	32	40 „
„ „ Zwaluw	-	1843,	116	31	0 „
„ steamer Bromo	-	1846,	116	32	45 „
Capt. J. J. Kingdom	-	1846,	116	32	30 „

Sogean Road. 366. The N.E. point of Lombok is fronted by two low islands called the Tweelings (Twins), which are surrounded and united by a reef; the road of Sogean is inside of these islands, having anchorage in from 8 to 12 fathoms; water and firewood are to be had there. The channel inside of these islands is safe, with soundings from 11 to 16 fathoms midchannel, regularly decreasing towards Lombok over a sandy bottom, and generally increasing towards the reef round the islands, which is steep-to, with 16 fathoms near its edge. Capt. W. C. Leisk passed eight times through it with beating winds; Capt. Kingdom also found it free from danger: the Lombok shore, as well as the reef of the Tweelings, may be approached to the distance of a quarter of a mile, as a man from the masthead can see all the dangers on either side. The Bangalore anchored in 6 fathoms on a detached coral bank 3 miles N.W. from the Tweelings, in 7 fathoms, Lombok peak bearing S.W. b. W. southerly, centre of the Tweelings S.S.E. $\frac{1}{2}$ E., and she had overfalls 11, 8, and 9 fathoms, with the Tweelings bearing S.E. b. S., and Lombok peak S.W. b. W.

Rotsige Islets. 367. Farther in Allas Strait, there is a group of three low islands bearing S.W. b. S. from each other, and a dry sandbank; but they are all connected by a reef which projects about a mile to the south-eastward. The channel to the westward of the group is free from danger, with regular soundings from 15 to 17 fathoms throughout. The channel to the eastward of them is much wider, but destitute of soundings, for which reason the former is more generally used. When proceeding to the southward, the Lombok shore ought to be kept at least a mile distant in order to avoid the shoal on which the

Surat Castle Shoal. Surat Castle, an English Indiaman, struck in March 1796; it is a coral patch of 3 fathoms, lying a little to the S. of the point of land that bears W. b. S. from the S. extremity of the Rotsige Islands, and opposite to a fresh-water creek in the bight, to the southward of that point; near it on the outside the soundings are irregular from 7 to 14 fathoms, and there are 10 and 11 fathoms inside between it and the Lombok shore. There are overfalls from 25 to 10 and 6 fathoms, coral rock, about 3 or 4 miles S.S.W. from the Rotsige Islands, but not less, it is believed, than 6 fathoms. The bark Rachel anchored on a detached coral bank in 6 fathoms, with the sandbank island off Lombok Town

N. b. W. ½ W. about 2 miles; and the round hill on Lombok beach in one with a very conspicuous green hill inland, W.N.W. ¼ W., and from which hill Lombok Peak bears W.N.W. There are 20 fathoms between this bank and the shore; Capt. Leisk passed twice over it. The Planter had soundings of 3 fathoms on a reef about 2 miles S. b. E. from the Rotsige Islands, on which there may be shoaler patches. *Planter Reef.*

368. The road of Lombok is sheltered by a dry sandbank and a narrow channel with soundings of 3 and ¼ fathoms, from a point of land which projects to the northward and forms a cove, inside of which there is anchorage for proas and probably for larger vessels. The sandbank is steep-to in 7 fathoms, and 20 fathoms at a short distance. The anchorage inside is safe in both the monsoons, and it is much easier to water there than at Laboe Hadye. Farther to the southward there is anchorage in 16 fathoms on the Lombok side of the strait. *Lombok Road.*

369. The road of Laboe Hadye* is not quite safe during the eastern monsoon, as the anchors often drag when the sea breeze is very strong; it sets in from the southward, generally at 9 or 10 o'clock in the morning, and continues to blow till late in the afternoon. The anchorage for large ships is in 17 or 15 fathoms, black sand, about 1½ or 2 miles off shore, with Lombok Peak bearing N.N.W., the southernmost bluff island on the Sombawa side of the strait E.S.E., and the next to the northward E. ¼ N. or E. ¾ N. These islands are the best guide to know when abreast of Laboe Hadye, for being situated behind a tope of cocoa-nut trees it is not easily perceived from the offing. Ships ought never to go under 10 or 11 fathoms. The mouth of the river is fronted by a reef stretching along the shore at the distance of a cable's length, and inside of which the proas anchor. The proper channel through it is nearly opposite the river's mouth; but small boats may cross the reef to the southward of the town in fine weather. Boats sent to fetch water anchor inside of the reef at the mouth of the river; the casks are filled about 100 yards from the beach, and then *Laboe Hadye Road.*

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* Horsburgh made this village, 1796, in 8° 42′ 30″ S. and 8′ 30″ E. of Lombok Peak. *Laboe Hadye.*

Capt. Bowman of the Diana - „ 8 42 0 „
„ J. J. Kingdom - 1846, „ 8 43 0 „

floated off to the boats. The water is good, but ought not to be filled when the tide is high, for it is then brackish; and during the south-eastern monsoon it is often tedious getting water off from the shore, as there is then generally a great surf upon the reef; loaded long boats can only pass through the proper channel after half flood or near high water. Wood may be cut near the river, about half a mile up, and floated down the stream; and refreshments of every description are to be procured here in great plenty. The flood sets to the northward, and the ebb to the southward, about 1½ or 2 knots at the springs; it is high water in the roads about 12h 30m at full and change, but nearly 3 hours sooner upon the shore, and the rise of tide is 10 or 12 feet.

Pidioe Bay.

370. Pidioe is more frequented than Laboe Hadye, being more safe and convenient for watering, as the river is navigable by boats. On Cape Louar, the north point of the bay, there is a flagstaff in about 8° 47′ S. and 116° 34′ 12″ E.* The anchorage is in 7 or 8 fathoms, with Lombok Peak bearing N. ⅝ W., the southernmost island on the Sombawa side of the strait E.N.E. ½ E., the flagstaff on Cape Louar N., Ringiet Point in one with the southern part of the Tafel Berg near the S.W. point of Sombawa S.E. Ringiet Point, on this bearing, is a good mark to avoid the reefs to the southward of the anchorage, and this line ought not to be passed when entering the bay; the only other dangers to be avoided are the reef off Cape Louar, which is nearly dry, and a rock bearing S. ⅜ W., about a cable's length distance from the flagstaff, and visible at low springs. Captain Kingdom discovered also, in 1846, a sandbank with 3¾ to 5 fathoms on it and 8 fathoms all round, Ringiet Point bearing S.E. ¼ S. southerly, East Island S. b. W. ½ W., and the flagstaff on Cape Louar N.W. ¾ W.

Islands along the N.W. coast of Sombawa.

371. The N.W. coast of Sombawa is fronted by a group of islands, inside of which there is a channel about 2 or 3 miles wide.

The True Briton and Royal Charlotte were drifted close to these islands by an easterly current during a calm, September

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* According to—

Cape Louar.

H.F.M. frigate Thetis, 1825, in	8° 45′ 26″ S. and	116° 34′ 48″ E.
H.B.M. sloop Fly - -	„ 8 47 43 „	116 34 0 „
Capt. J. J. Kingdom, 1846,	„ 8 48 30 „	116 33 40 „

13, 1797, and had no soundings until within a cable's length of the reef that skirts them.

When the True Briton first got ground in 50 fathoms she anchored with a kedge, and had 30 fathoms under the stern, with the nearest part of the reef bearing S. b. E., a long half cable's length distant; the low islands from S. b. E. ½ E. to W.S.W. ½ W., easternmost point seen of Sombawa E., and Lombok Peak W. ½ S. The boat sounded between the ship and the reef in 25, 10, 5 fathoms, and then suddenly to 3 feet on the reef.

Captain Ashmore visited the N.W. coast of Sombawa in 1804, and anchored near the village Paddie, after having passed among several shoals and over two patches in 5 fathoms water. When at anchor in 10 fathoms sand the observed latitude was 8° 24′ S., extreme points of the bay from S.W. ¼ W. to N.E. ¼ N., Northern Island N. b. E., and several other islands extending to the W.S.W. From thence he was two days sailing in a canal formed by islands and coral reefs. Their last anchorage in 19 fathoms, when the boat had 8 fathoms close to the ship, was with the northernmost of these islands W. 1½ miles, and the northern extremity of Lombok N.W. ½ W.

Captain Ashmore did not find any articles fit for European trade; nevertheless, many vessels now frequent this coast.

Mr. H. Zollinger, who visited this coast in 1847, gives the following description of it:—

Kamoedong, Tawar, Segattal, and Belo, the north-easternmost of the islands which front the N.W. coast of Sombawa, are low, with rocks contiguous to their points, and deep channels between them. There are soundings from 4 to 14 fathoms in the channel inside of these islands, and the bays of Paddie, Boeër, and Allas afford anchorage. The latter is a cove stretching about S., and deep enough for large ships. To the S.westward of Belo are the islands of Bassar, Genang, Patakie, Oenet, Passeran, and Tatagen, all high, and Belong, a low island and the southernmost of this group. Inside of the latter islands are soundings from 25 to 30 fathoms.

372. The road of Taliwang affords a secure anchorage during the south-eastern monsoon. From the bluff N. point of the bay, Lombok peak bears N.W. ¼ N., the southernmost island in the strait W.N.W. ¾ W., and Ringiet Point S.W. b. W. ¼ W., and *Taliwang Bay*

the S. point of the bay S.E. b. E. ½ E. 12½ miles from Laboe Hadye; the bay may also be known by a peak near the beach rising to a height of about 1,570 English feet. Water and wood are easily procured, and provisions are cheap, but they must be ordered a day before.

Ships in want of water and wood should anchor to the south-eastward of Knoop Island, in 15 or 16 fathoms; but when provisions only are wanted, they may anchor in 7 or 8 fathoms, S. b. E. from a storehouse, standing near the bluff N. point of the bay. The natives are polite and ready to assist.

The straits to the eastward of Java being all more or less subject to frequent calms, it is advisable to keep in soundings, on account of which the Lombok side of the strait is to be preferred, the more so as the currents are not so strong there as in the middle and on the east side of the strait.

The Strait of Allas is easily known in coming from the southward, the S.W. part of Sombawa being high rugged land, whereas the E. end of Lombok is composed of steep cliffs, facing the sea. The S.W. point of Sombawa is a double tablehill, in 9° 2′ S., and 116° 47′ E., and Lombok Peak bears N. b. W. ¾ W. from the entrance of the strait.

With the S.E. point of Lombok bearing W.N.W., and the S.W. point of Sombawa S.E. b. E., soundings are got in 64 or 70 fathoms, clean bottom; but farther to the southward and eastward the bottom is rocky, and no soundings less than 80 or 90 fathoms.

Winds. 373. In the south-eastern monsoon, the winds blow strongly from the southward during the greatest part of the day, but they subside towards evening, when the land wind from Lombok begins. In the western monsoon, variable and baffling southerly breezes are often experienced in the Strait of Allas.

Bound to the southward, it is advisable to get underway very early in the morning, in order to clear the strait, if possible, before the sea breeze sets in.

CHAPTER IV.

Islands to the Northward of Baly, Lombok, and Sombawa.

374. Sapoedie Strait, formed by the island of that name and Giliang, is about 6 miles wide, and free from dangers. The N. point of Giliang lies in 6° 59′ 36″ S. and 114° 12′ E. *Strait of Sapoedie.*

375. The channel between the islands of Sapoedie and Ra-as is seldom used. H.N.M. schooner Iris, returning from Kangeang, passing to the eastward of Manok, and through that channel, discovered a reef with only 2 fathoms, about a cable's length in diameter, bearing W. ¼ S. from Sarok, and N. ¼ E. from the W. point of Ra-as. H.N.M. steamer Merapie went, in 1846, through the latter passage, and afterwards between Sapoedie and Panjangan, which she found to be a clear channel. Panjangan bears due E. from the N. point of Giliang, N. from Mount Sedano, N. ⅔ E. from Mount Idjing, and W.N.W. ½ W. from Manok Island. *Manok and Sarok Isles.*

376. There is a group of islands to the eastward of Ra-as Island, each of which is surrounded by a reef, with passages between them, which have not yet been surveyed. A squadron, commanded by Lieut. F. X. Hooft, passed, in 1844, close along the S. side of these islands, without discovering any danger in the offing, but, in 1843, the British ship Islay struck on a coral rock in 13 feet water, and soon became a total wreck. According to Captain Galt, of that ship, this danger lies about 5 miles S.E. b. E. from Little Ra-as (probably Toendo or Toendoek Island), and is not to be seen unless very near, for when it was reported from the mast-head, it was already too late to tack. *Ra-as Island.* *Toendo Rock.*

In 1843 H.N.M. schooner Zephyr examined the Ra-as group. She made Goo Island in 114° 49′ E., passed along the E. and N. sides of Toendo or Toendoek, and anchored on the N.E. coast of Ra-as Island in 30 fathoms, Toendo bearing from S.S.E. ½ E. to S.E. ¼ E.; Ra-as from S. b. W. ½ W. to W.; Sarok N.W. ¾ W.;

Ayer N. b. E. ½ E.; Tenga N.E. b. E. ½ E.; Timor E. b. N. She passed between Sarok and Ayer, and anchored near the latter island in 17 fathoms, rocky bottom, with Goo bearing E.S.E.; Kamoedie E. b. S.; N.E. point of Tenga S.E. b. E. ½ E.; N.E. point of Ayer S.E. b. E., its S.W. point in one with the E. point of Toendo S.S.E. ½ E.; the W. point of the latter island S. b. E.; Ra-as Island between S. ½ W. and S.W. b. W. ½ W.; Sarok W. b. S. The pirates are said to water here, but the Zephyr found only three wells, which were dry.

Passing to the northward of Sarok, she steered for Manok, and anchored near it in 24 fathoms, Panjangan bearing between N.W. b. W. and W.N.W.; Manok from N.W. ½ W. to N. ½ W.; Ayer, E.S.E.; Sarok in one with Toendo, S.E. ¾ E.; extremes of Ra-as Island S.E. ½ S. and S. ¾ W.; Sapoedie between S.S.W. ¾ W. and W.S.W. ¾ W.; longitude by chronometer 114° 30′ 46″ E.

Takat Bank. 377. Takat Bank is very extensive. The reef is coral and steep-to, with three sandbanks about 2 or 3 feet above water. The water on it is much discoloured, and it may be discerned from the mast-head at the distance of more than 4 miles. The reef stretches about 8 miles W. ½ N. and E. ½ S. H.N.M. schooner Iris anchored on its western edge in 9 fathoms, rocky bottom, the northernmost land of Kangeang bearing N.E. b. E. ¾ E. H.N.M. frigate Boreas approached the discoloured water within half a mile, in soundings of 42 fathoms, the island Urk bearing E.S.E., the N. point of Kangeang N.E. ½ E., its S.W. point E. ¾ N.; discoloured water of Takat Reef from W.S.W. to S.E. b. E. ½ E.; some trees just in sight from the deck S.W. b. W. ¾ W., distant 4 or 5 leagues. The sea broke heavily on the dry parts of the reef, to the southward of which open water was seen. The next day she approached close to the eastern edge of the shoal, but had no bottom at 45 fathoms, about half a mile to the eastward of the discoloured water, the easternmost dry sandbank bearing W.S.W. ½ W., and Urk E. b. S., distant about 7 miles. H.N.M. steamer Bromo, 1847, had no bottom with 40 fathoms, Urk bearing E.S.E. ½ E., high land about Katapan N.E. ½ E., N.E. point of the shoal water W., distant half a mile; she steered W. b. N. along the northern edge, but could get no soundings with 40 and 45 fathoms. The channel to the westward of Takat shoal appeared

to be clear, but the passage to the N. and eastward of the reef is much frequented by ships bound to Macassar or Amboina during the eastern monsoon.

378. Urk, or Kamirian Island, in 7° 4′ 30″ S. and 115° 14′ 30″ E., may be seen from the deck, in clear weather, at a distance of 16 miles; it is covered with trees and surrounded by a reef, which extends chiefly to the W.N.W. *Kamirian or Urk.*

The channel between Urk and Kangeang is 8 miles broad, quite safe, with soundings of 40 and 50 fathoms mid-channel, 25 fathoms near Urk, and 15 to 10 fathoms near Kangeang.

379. Kangeang is an extensive island. The N.W. part is rugged and covered with trees, and visible at the distance of 10 leagues. The E. part is of the same height, but of a level appearance. The S.W. part is not so high, but thickly wooded and may be seen about 7 leagues. The island belongs to the Sultan of Sumanap; it is fruitful, but thinly inhabited, on account of the repeated incursions of the pirates. *Kangeang.*

Contiguous to the N.W. point of Kangeang lies Manpoeriet, which may be seen at a distance of about 9 leagues. It is surrounded by an extensive reef. *Manpoeriet Island.*

The Bay in Kangeang, to the southward of Manpoeriet, is safe during the eastern monsoon, having anchorage in from 10 to 6 fathoms. H.N.M. steamer Hecla anchored here, April 1843, in 6 fathoms, Manpoeriet bearing N.W., and the flagstaff near the village of Katapan E. ½ S. The northern part of the bay is shoal. Entering the bay, be careful to avoid also the reef projecting from a point on the S. side of the bay, close to which there are 6 fathoms. Sailing ships ought not to run in with Manpoeriet to the westward of N., as there is little space to tack. Water is very scarce, and only to be had from wells near the village. Reefs project about a mile from the points on the western side of the island, with a great surf on them; but ships may anchor during the eastern monsoon in from 16 to 28 fathoms, about 3 miles off shore. *Katapan Bay.*

A Dutch frigate and her convoy anchored, in 1805, in a bay on the S.E. side of Kangeang, in 24 fathoms, mud, Urk bearing S.W., distant about 10 miles.

380. There is a group of islands to the eastward of Kangeang, the inhabitants of which have often committed piracies when ships ran aground on the neighbouring reefs, on *Islands east of Kangeang.*

account of which they are now often visited by the Dutch men-of-war.

Sepeckan Road. 381. There is good anchorage near Sepeckan in $5\frac{1}{2}$ or 7 fathoms, with that island bearing N.N.W. $\frac{1}{2}$ W., and Sedoelang N.E. $\frac{1}{4}$ N. The channel leading to it is formed by Seboes and Seseyl, Baly Peak bearing S. b. W. from this passage. The soundings between these islands decrease regularly from 15 to 10, 8, and 6 fathoms when approaching the anchorage near Sepeckan. Till lately no passages were known to the northward, and the space between Setubo and Sedoelang seemed to be filled with reefs, on which the Fairy Queen was lost; but H.N.M. steamer Bromo, Commander J. A. de Smit, found a clear passage from Sepeckan to Hastings Island, limited to the northward by Sedoelang and Pangeroengan, and to the southward by Scrityng and Bongalore, with regular soundings from 12 to 30 fathoms between these islands, and no bottom at 40 fathoms farther to the eastward.

382. The S.E. point of Pandiang, which is the south-easternmost island, lies in 7° 9′ S. and 115° 58′ E., having a reef projecting about a mile.

383. Ships bound to Macassar or Amboina during the eastern monsoon, having reached Giliang, may work through the strait of Sapoedie towards Baly; but it is often difficult to make direct southing, as the winds are then generally blowing from that quarter, and the currents setting generally to the northward. The passage along the N. side of Ra-as Island and Takat Bank, and between Kangeang and Urk, or between the latter and Takat, is often to be preferred, as the winds are there more variable.

Kalkoen Islands. 384. The Kalkoen Islands, to the northward of Kangeang, are very imperfectly known. The English ship James and Mary was entangled among them in February 1822, but had the good fortune to find a passage to the eastward, along the N. coast of Kangeang, and between several islands and shoals. The dangers round this group of islands extend beyond their view, for the Belliqueux found overfalls of 50 fathoms, mud, to 7 fathoms coral, and soon afterwards touched the ground. At 3 P.M. she sounded in $4\frac{1}{2}$ fathoms, and then in 10 and 40 fathoms. There was no land in sight, but she placed this danger in 6° 30′ $\frac{1}{2}$ S. by previous observations,

and 5′ W. of Hastings Island, according to the mean of five chronometers.

385. Hastings Island, or Poulo Sakalla, is about 2 miles in extent, covered with wood, with a sandy beach on the E. side, and terminating to the northward in a low point, with breakers on it. It may be safely approached within 4 miles. It is in 6° 56′ S., and 116° 18′ 20″ E. The channel between this island and the Paternoster group is about 16 leagues wide, and the general passages between the Straits of Allas and Macassar.

386. The Paternosters extend about 30 leagues in a N.E. or N. E. b. E. direction, and are very imperfectly known, with the exception, however, of some of them which were visited by Capt. Kingdom, of the Dutch bark Diederika, on several passages between Java and Macassar. He made the south-westernmost island, which is long, low, and flat, and from which a reef runs about 4 miles to the N.N.westward, with soundings of 17 fathoms close to its edge, in 7° 26½′ S. and 117° 10′ E., and the north-easternmost island in 6° 37′ S. and 118° 22′ E. *Paternoster Group.*

When Maio Island bore from S.S.W. to S. b. E. ¼ E., and Setonda S.S.E. ¾ E., the Ardassier saw the southernmost Paternoster bearing N.N.W. ½ W., distant about 5½ or 6 leagues.

The Minto saw one of the south-easternmost of them, bearing N.N.E., distant 5 miles, when in 7° 38′ S. and 117° 41′ E.; and the Dutch frigate Maria saw two of them low and woody, which she computed to be in 7° 36′ S. and 117° 55′ E. There appear to be channels between them, for ships have passed through the group.

They are dangerous to approach from the southward on account of the Zandbuis and several other shoals, the positions of which are not well ascertained; it is therefore advisable to keep near Sombawa when sailing between that island and the Paternosters. *Dangers to southward of the Paternosters.*

The Alexander struck on the Zandbuis shoal, and was nearly lost, in 1806. This bank she supposed to be in 7° 52′ to 7° 47′ S. and 117° 25′ to 117° 29′ E., by chronometers from Baly town. *Zandbuis Shoal.*

Capt. W. Greig, passing in the Minto to the northward of these shoals, between them and the Southern Paternosters, saw a narrow sandbank extending E. and W. about 2 or 3 miles.

When 2½ miles to the northward of it, Lombok Peak bore S.W. ½ S. and Tambora Mountain S.E. ¾ E.

Capt. Warrington, of the Mary Ann, saw two dry sandbanks bearing N.N.W. and S.S.E. of each other, which he places in 7° 45′ S. and 117° 13′ E.

Capt. Kingdom, in the bark Diederika, saw from the masthead two small dry sandbanks close together, and another a little farther to the westward, bearing N.W. or N.W. ½ W., distant about 5 miles, at the same time that the N. point of Maio bore S.E. ¾ E., and the centre of Vlak Island S. b. E. ¾ E.

H.N.M. schooner Zephyr, at daybreak, fell in with several dry sandbanks, about 4 or 5 feet above water, and surrounded by rocks. When in 5 fathoms on a reef, a dry sandbank with heavy breakers on it was seen N.W. b. N. distant 3 miles, two other dry sandbanks joined by a reef W.S.W. and W. b. S. distant 2 miles; at the same time Lombok Peak bore S.W. ½ W. and Mount Tambora S.E. b. E. ½ E. From thence she steered S.S.E. 4 miles, and then struck soundings in 4 fathoms on a single rock.

The Dutch frigate Maria, 1st April 1805, saw a sandbank, 2 or 3 feet above water, bearing N. ½ W. about 2 miles distant, at the same time that Lombok Peak bore S.W. b. W., a high mountain on Sombawa E. b. S., N. point of Maio S.E. b. E. ¼ E., centre of Vlak Island S.E. ½ S., and the easternmost of the high mountains on the S.W. part of Sombawa S. ½ E.; she inferred that this sandbank is in 7° 56′ S. and 117° 15′ E.

H.N.M. schooner Emma made a fruitless search for this bank in July 1825, but was thereby led to the discovery of another danger:—Vlak Island bearing S.E. ½ S., the N. point of Maio S.E. b. E. ¼ E., Lombok Peak S.W. b. W. ¾ W., and Mount Tambora E.S.E., with no appearance of shoal water from the masthead. From thence she ran N.E. ½ N. 5 miles, when a sandbank was reported; having brought it to bear W.N.W. ½ W., distant about 3 or 4 miles, Lombok Peak bore S.W. b. W. ¼ W., and the N. point of Maio S.E.; and, moreover, by meridian altitude of the sun, this bank is in 7° 51′ 30″ S. The bank is only 40 or 50 feet in extent, and 4 or 5 feet above water, appearing at a distance like very white sand; but it was thought to be a coral bank.

Besides these dangers H.B.M. ship Baracouta discovered, in 1810, a shoal bearing W. b. N. in 7° 52′ S. and 118° 3′ E., and

shortly afterwards a sandbank in 7° 54′ S. and 118° 0′ E. Lieut. J. C. du Cloux, D.R.N., was informed at Sombawa roads that these shoals lie much farther, about 11 leagues, to the northward of Sombawa.

387. The Postillon group was visited, in 1846, by H.N.M. brigantine Lansier, Commander P. Bruining; he places the easternmost island in 6° 50′ S. and 119° 15′ E., North Island in 6° 31′ S. and 118° 46′ E., the south-westernmost, or Saunders Island, in 7° 14′ S. and 118° 30′ E.,* and calls the largest island of the group Lansier Island. He found anchorage in 13 fathoms on the N.W. side of Lansier Island, close to the reef which surrounds the easternmost cluster, and passed between the 5th and 6th islands of the Northern group, called Senane and Sanipa. He ran then to the southward through the channel between Tain and another island to the E.N.E. of the latter. There is a rock in this passage bearing W. ½ S. from the latter island and N.E. from Tain, on which, however, according to the pilots, the least soundings are 9 fathoms. The same ship passed also between the Postillon Islands and the N.E. Paternoster; and there are other channels through this group, but it would be most dangerous to attempt them without having a good pilot on board. *Postillon Group.*

388. On account of the above-mentioned islands and dangers, it is prudent to keep within a short distance of Vlak Island and the coast of Sombawa, and not to go to the northward of 8° latitude before you have cleared the Baracouta shoals. If bound to the strait of Salayer during the western monsoon, steer for the eastern Postillon Island, and run within sight of it to be certain of weathering the strait, as the currents set then strong to the eastward.

389. Bound to Macassar during the eastern monsoon, continue to work along the coast of Sombawa, until Mount Apie bears S.W. b. S. or S.S.W.; country ships, however, work along the S. coast of Kangeang and to the northward of the Paternoster and Postillon groups.

* H.N.M. sloop Postillon, 1841, made the easternmost island in 119° 14′ E., and North Island in 6° 32′ S. and 118° 48′ E. H.N.M. steamer Vesuvius, 1847, made the first island to the S.E. of Sanipa in 118° 57′ E., and the island to the E.N.E. of Tain in 118° 47′ E.

CHAPTER V.

The Island of Sombawa and Sapie Strait.

Sombawa.

390. Sombawa is a high volcanic island, and but very thinly inhabited since the tremendous eruption of Mount Tambora, April 11th, 1815, by which whole towns and villages, people and cattle, were destroyed; a large part of the island was thickly covered with ashes; nearly every plant withered and died; and thousands of the inhabitants perished from hunger. On that dreadful night the English ship Prince Regent, while near Rotti Island, heard noises like guns, and shortly afterwards the sky became obscured, accompanied by a heavy fall of dust, which continued till the 14th, then 189 miles to the westward of the place where it was first seen. The dust and ashes reached Sourabaya, and great quantities fell at Banjoewangie.

The natives are a goodnatured people, and the island produces a great quantity of sandal-wood; the trade in horses is considerable, the yearly export from Bima amounting to about a thousand.

Vlak Island.

391. Vlak Island, the centre of which is in 8° 8′ S. and 117° 23′ E., is very low near the W. end; the northern part is a little elevated, and may be seen from deck at a distance of 16 miles in very clear weather. It has reefs from the N. and S.W. points, and a dry spot near its northern edge, from which the E. point of the island bears about S. b. E. The S.E. shore forms a small bight, opposite to which a single ship may find anchorage in 30 fathoms a mile off shore and half a mile from a reef, which runs in a straight direction between the points of the bight; but the ground is very steep, as no bottom was to be had with 60 fathoms line, about half a mile farther to seaward.

April 1843, H.N.M. steamer Hecla anchored, while the armed boats were sent to examine the island, in 20 fathoms, the N. point of the island bearing W. b. N., the S.E. point S.S.W. $\frac{3}{4}$ W., and the dry spot on the reef N.W. $\frac{1}{2}$ N.

392. Maio is an extensive island, regularly high, with the exception of the E. point, which appears at some distance as a low and separate island. A reef projects from the N.W. point; and the bay on the W. side of the island is full of shoals, behind which the pirates often take shelter. In October 1847 H.N.M. steamer Vesuvius, Lieut. Baron de Constant, destroyed here five piratical proas, which had moored along the shore. The steamer, after passing among several shoals, on the edge of which they sounded in $2\frac{3}{4}$ fathoms, at once deepening to 40 fathoms, no bottom, approached the shore within a cable's length in 17 and 19 fathoms. *Maio Island.*

H.N.M. brigantine Dolphin anchored in 21 fathoms, hard bottom; the nearest part of Maio distant $1\frac{1}{4}$ cables' lengths, the S.W. point of the same island bearing S. $\frac{1}{2}$ E., and the centre of Vlak Island N.W. b. W. The boat sounded to the N. and southward of this anchorage, and towards the shore the soundings regularly decreased to 7 fathoms; very near the beach they had $1\frac{1}{2}$ fathoms. In former times the W. part of Maio was inhabited, and there are several springs of good water on that side of the island. The frequent visits of the pirates obliged the inhabitants to leave this island for Sombawa.

In 1843 and 1844 H.N.M. steamer Hecla ran within 2 miles distance along the N. coast of Maio, and went through the strait between its E. end and Sombawa, but had no soundings with 25 fathoms line; a reef runs round the E. point. In 1843 the squadron under Commander J. Coertsen, D.R.N., anchored in a bay on the S.E. side of Maio; the Hecla came to in 19 fathoms 2 cables' lengths off shore, the points of the bay bearing N.E. $\frac{3}{4}$ E. and S.W., Bassa Point S.E. $\frac{1}{2}$ S.; during the night, in a strong breeze from S.S.E., the Zephyr and Postillon struck the ground and were obliged to leave this anchorage in tow of the Hecla.

393. Setonda Island is in 8° 6′ 30″ S. and 117° 47′ 24″ E.; it is of a moderate height, with the top appearing somewhat flattened, when seen from the north-eastward. The Hecla steamed round it, at a distance of 2 or 3 cables' lengths, least soundings 10 fathoms; the reefs from the points are of very small extent. Vlak, Maio, and Setonda are all uninhabited, for the pirates often make their appearance there. *Setonda Island.*

Sombawa Road.

394. The bay of Sombawa to the southward of Vlak Island has no other dangers than the reefs along the shore, which project most from the W. point of the bay, about 2 cables' lengths, and are steep-to and dry at low water; the anchorage is in 20 to 16 fathoms, clay bottom, about 2 cables' lengths off shore. The Hecla anchored here in 20 fathoms, the points of the bay bearing W.N.W. $\frac{1}{4}$ W. and N.E. b. N., the village near the beach E. b. S., W. point of Maio N. b. E. $\frac{1}{2}$ E. Entering from the northward and steering toward the centre of the bay, the soundings decrease regularly but rapidly from 40 to 17 and to 7 fathoms within a short distance from a dry sandbank opposite to the river's mouth; and as the bay is open from N.N.E. to N.W. b. W., a vessel cannot be considered safe during the western monsoon. The landing is easiest to the westward of the river on a sandy beach, as the river can be entered only at high water. The village of Sombawa is about 2 miles inland.

Salee Gulf.

395. To the eastward of this bay, and opposite to the S. coast of Maio, is the extensive Gulf of Salee. Mr. H. Zollinger, who explored the whole island of Sombawa in 1847, gives the following description of it.

The large Gulf of Salee extends about 13 leagues in a S.E. direction, and is about 4 leagues wide. The entrances along the N.E. and S.W. points of Maio are both narrow; the western one being about a gun-shot wide. The S. point of Maio is pretty bold, but reefs project from Menangis and Gayong Points, on the southern shore; and in the bight of Peniaring between these points there is shoal water.

Gayong Point forms the W. side of an inlet with deep water inside, which stretches about 4 miles S., called Bango, with a small village. The entrance of this inlet bears S.W. b. S. from Setonda, but it is too intricate for ships, having reefs on either shore. Contiguous to the E. point of Great and Little Raras are Dangar Islands.

Liang and Negalie, two long, narrow, and hilly islands, stretch parallel to the coast, and form two narrow channels with deep water stretching about N.N.W. and S.S.E.; proas may enter them at both ends. The southern beach is inhabited by fishermen, and about 3 miles inland stands the large village of Lapie.

The next bay to the south-eastward is called Tieris ; then follows Kollong, a large bay, bounded by a monotonous and barren plain, and by low hills to the southward ; the S.E. winds pass freely over them and blow strongly in this part of the gulf. The bottom of the bay is mud mixed with sand, and its little depth of water does not permit vessels to stand close in shore. Far inland is Plampang, a considerable and well-fortified place, governed by a nearly independent prince.

The Bay of Ampang to the eastward of Kollong Bay is also shallow ; fishermen inhabit the shore, and about a mile inland is the village Ampang, also a considerable place, fortified and with some trade ; provisions are to be had there.

There are several islands in this part of the gulf, called Tengar, Tapan, Kebo, Dempoe (easily known by two peaked hills), Tepie, Rakit, a large island, to the southward of which is a channel for proas, and the rock Dewa near Sakoeroe Point.

Kowanko Bay, to the eastward, is shallow ; near its eastern beach is the small island Balereh, and the long and low island Kowanko, stretching E.S.E. ; Nissah Monteh is contiguous to its W. point, and fronts the bay to the northward ; the village is about a mile distant from the beach.

There are also several inlets in the E. part of the gulf, but most of them are closed by reefs ; they are named Tioerie Lora, with an islet inside, Sonapa and Gempoe, fronted by the rocks of Poedo ; rivers disembogue in the former and in Sonapa. To the northward of Poedo there are soundings in 13 fathoms, sandy bottom ; but several large rocks make it dangerous to approach the shore. The small village Gempoe stands about a mile from the beach ; good fresh water is to be had here, and the country abounds with game.

The northern shore is uninhabited ; it runs in a straight direction and is steep-to, affording no anchorage. From August to October pirates come to this bay for fire-wood, and greatly disturb the natives, who therefore build their villages far inland. They often attack proas and ships which pass near Maio Island.

396. The tides set with great velocity through the Strait of Salee, and probably also through the northern entrance to the gulf. The flood sets to the E.S.E., and the ebb to the W.N.W.; *Tides.*

during the eastern monsoon the latter is strongest, and it is high water about the moon's meridian passage.

Winds. 397. The chains of mountains generally follow the direction of the bays which they limit, causing S. or S.S.E. and N. or N.N.W. winds in the W. part of the gulf, N.W. and S.E. winds near its centre, and E. or E.S.E. and W. or W.N.W. winds at its E. end. During the eastern monsoon the northerly winds are light, on account of the vicinity of the high land of Tambora and Maio, but the south-easterly winds blow then rather strongly over the low land of Kollong. Nearly all the islands, reefs, shoals and bays are in the southern part of the bay; the centre and N. part being clear of dangers according to the natives. Pilots for this gulf are to be had at Sombawa town. There is plenty of wood on either shore, but provisions and fresh water are very scarce. The rivers are too shallow for boats, and they have brackish water for a great distance upwards as they pass amidst alluvial grounds nearly without declivity.

Tambora. 398. The Gulf of Salee is separated from the Bay of Dompo by the isthmus on which stands the high volcano of Tambora. The top of the mountain is very large, and of a round shape, in the longitude of 118° 1′E.*, and bearing S.E. b. E. $\frac{1}{2}$ E. from Setonda Island.

In former times the Dutch had settlements in the Bay of Dompo, but they have been abandoned long since. Mr. Zollinger, on his journey to the top of Tambora, found a fine spring of water, called by the natives Tampoerokh, close to the beach on the western shore of the bay. Several inlets afford good anchorage, the westernmost of which, Bioe Bay, is much frequented by pirates. In former times the Dutch had established a trade for sapanwood at Kamboe, and the road of Kila is very safe during the eastern monsoon, but the villages along this coast are all deserted now on account of the frequent invasions of the pirates.

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* According to H N.M. frigate Boreas, 1838, in 118° 2′ 48″ E.
" " " Maas, 1839, 118 3 40 "
" " sloop Panter, 1839, 118 5 0 "
" " " Postillon, 1840, 118 0 50 "
" " " Koerrier, 1841, 118 4 43 "
" " brigantine Lansier, 1846, 118 1 30 "
" " steamer Vesuvius, 1847, 117 58 52 "

399. Bima Bay stretches deeply inland, and forms a safe harbour, where ships lie quite landlocked and sheltered on all sides by high land. In the wide entrance there is only a temporary anchorage. The shores which bound the bay approach each other about 4 miles from the entrance, forming a narrow channel for about 3 miles in length and not half a mile in breadth, with soundings from 32 to 20 fathoms, but leading to a spacious cove, in the centre of which lies the high island Kambing. The Dutch have a battery near the beach on the E. side of the bay. The narrow entrance is defended by two small bentings, where the Dutch colours are hoisted. To the southward of Bima the bay forms another spacious cove, with an islet near the southern beach. *Bima Bay.*

400. During the eastern monsoon, very strong southerly winds, accompanied by heavy squalls, continue to blow, sometimes for many days, outside of the narrow channel; and yet, inside, quite calm under the high land, and impossible to enter the bay. The land winds blow regularly during both the monsoons, and there is therefore no difficulty in quitting it. *Winds.*

401. Kambing lies due S. from the Narrows in 8° 26′ 45″ S. and 118° 44′ 45″ E. Having passed the Narrows, the village of Bima will be soon discovered; steer directly for it till in 11 fathoms, when a low point on the opposite side of the bay will be seen open with the S. point of Kambing Island. Do not run farther in, as the depths decrease rapidly from 9 to 2 fathoms on the edge of the muddy flat opposite the village. H.N.M. frigate Boreas anchored in 13 fathoms, Kambing bearing S.W. b. W. ½ W. and the battery S.E. ¾ E. It is high water at full and change of the moon at noon, and the rise of the tide is 6 feet. The landing is difficult, on account of the extensive mudflat opposite to the battery; water is scarce and bad. Variation in 1828, according to Captain Ashmore, 0° 7′ W. The Windhond found it, in 1842, 1° 20′ E. *Kambing Island.*

From the N.E. point of the bay the S. point of Apie Island bears E. ¼ N., its N.W. point N.E. b. E., and its southern peak E. b. N. When southerly winds prevent the entrance of the bay, it is advisable to anchor on the east side of the outer bay, as otherwise you are obliged to stand off during the night, and many days may be lost in a fruitless attempt to work in, such as was the case with the Boreas in June 1838.

Anchorage outside of the Narrows.

402. Commander J. Schroder, D.R.N., found a good anchorage in 18 fathoms, with the W. point of the bay bearing N.N.W. ½ W., Vader Smit Hill W.N.W., Batoe Point S.W. b. S., and Batoe Poetie N.N.E. ½ E., a cable's length from the shore, which rises immediately to a height of 100 or 200 feet, and forms a good weather shelter. Another good anchorage has been found in the same bight, between two reefs, distant from each other about 5 or 6 cables' lengths, in from 22 to 7 fathoms, good holding clay bottom. H.N.M. sloop Siwa anchored here in 11 fathoms, Batoe Poetie bearing N.N.E. ½ E. and the N.W. extreme point of the bay N.W. The southern reef has 2 or 3 fathoms at low water, but the northern reef is then partly dry. The anchorage may be known by a thicket of trees near the beach.

These anchorages, however, are not safe during the western monsoon, nor during a fresh sea-breeze; but they are proper places to wait for an opportunity to enter the Narrows in case of southerly winds or calms.

There is also a cove on the opposite shore, the entrance of which is in one with Vader Smit Hill or Soro Mandie W.N.W. ¾ W., and according to Lieut. Moggenstorm there are soundings of 5 fathoms in this cove, which he calls Batoe Pah.

Apie Island.

403. Apie is a high volcanic double-peaked island, between the latitudes of 8° 7′ 45″ and 8° 16′ 0″ S., and the southern or highest peak is in 119° 6′ 20″ E., according to the mean of 19 authorities, and it bears S. b. E. ¼ E. from the N. peak. The island is very steep-to on every side. Proas sometimes land there to cut wood.

Sapie Strait.

404. The Strait of Sapie, which lies between Sombawa and Comodo, was much frequented in former times, but at present the Strait of Allas is preferred, being both wider and easier. The northern entrance of the former is divided into two branches by Banta Island, but the channel between it and Comodo is seldom used, as it is to leeward during the western monsoon, and has no soundings, while the ebb tide sets strongly upon Comodo, which is a high and steep land, and surrounded by rocks and reefs. Between Apie Island and Banta, and a considerable way to the southward, the sea is clear.

Banta Island.

405. Gili Banta, or Banta Island, may be known by its northern peak gradually sloping to its low southern point.

That peak is in 8° 22′ 30″ S. and 119° 21′ 20″ E. The W. side of the island forms a pretty large bay, but H.N.M. steamer Hecla, when rounding the N.W. point, at the distance of a mile, June 2, 1844, fell in with a reef when the island bore from S. by E. ¼ E. to E.S.E.

406. Setan, or Macota, is a small peaked island, with several rocks to the northward, bearing S.S.E. ½ E. from Apie Peak, and S. b. W. from Banta Peak. The Middle Rocks lie W.N.W. ¾ W. from Setan, S.S.W. ½ W. from the eastern extremity of Banta, and S.E. ½ E. from the Black Rocks, and the latter bear W.N.W. from Setan. The Low Rocks, nearly level with the water's edge, lie about 3 miles S.W. from the S. point of Banta, and 4 miles N. ½ W. from Setan. When Banta Peak bore N.E. ¼ N., and Setan S.E. by E. ¼ E., the Boreas had the Low Rocks bearing N.E. by E. visible from the shrouds. *Setan.*

407. The eastern coast of Sombawa stretches at first about S. to Sapie Bay, where it takes an easterly direction till past Midden and Todo Islands, and then turns again to the southward as far as the southern entrance of the strait. Near the N. point of Midden Island lies Keppeh, a small islet, with two rocks, between which and Setan is the most frequented channel, being about 3 miles wide; about 6 miles to the southward of Keppeh lies Kamara Island, close to Sombawa.

408. Sapie Bay is formed by a deep bight in Sombawa, and sheltered by Midden Island, and some adjacent islets. The bay is 1½ miles wide, with soundings from 20 fathoms, gradually decreasing to 17 and 14 fathoms in the centre, and to 5 fathoms in the southernmost part of the bay; the shore of Sombawa is lined by a reef, but the islands may be approached within a short distance. *Sapie Bay.*

Sapie Town is situated by the side of a creek, at the south-western extremity of the bay; ships may procure there every kind of refreshments, which the natives will barter for toys, firearms, empty bottles, &c.; but single vessels ought to be guarded against any treachery of the inhabitants. Some therefore anchor outside of the bay in 24 or 25 fathoms. The steamer Hecla came to in 16 fathoms, with Midden Island bearing from N.E. b. E. ¼ E. to S.E. ¼ E., Banta Peak N.E. b. E., and Sapie Town S.W.

Rees and Britannia Bays.

409. Rees and Britannia Bays are formed by the projecting points of Sombawa to the northward of Sapie Bay, and at either of them ships may procure wood and water. The cove of Rees Bay bears from Keppeh Island W. $\frac{1}{2}$ N., but the best anchorage is in 20 fathoms, mud and sand, with Keppeh bearing E. $\frac{1}{4}$ S., as there is a bank of $6\frac{1}{2}$ fathoms, sand and shells, with 18 and 19 fathoms, mud and sand, all round in the northern part of the bay, and inside there is a coral spot, having on it only 10 or 11 feet water.

The watering-place in Britannia Bay bears from Keppeh Island N.W. b. W. $\frac{1}{2}$ W., and is about 20 yards from high-water mark. Small casks, which can be carried by two men, are best for watering there. As the soundings are irregular, with rocky bottom in the middle of the bay, ships should anchor in 25 fathoms, almost a mile off its northern point, for a rocky shoal projects nearly 2 miles from the southern point; a bower anchor is required to secure a ship here during the western monsoon.

Soundings.

410. The outer verge of soundings stretches nearly in a direct line from Keppeh to Apie Islands; the soundings decreasing pretty regularly towards Sombawa from 60 to 20 fathoms, from half to a quarter of a mile off shore; but towards Banta there are no soundings, unless very deep. Nor are soundings to be had in the southern part of the strait S. of Setan, beyond half a cable's length from it; there are 20 and 25 fathoms between it and the Low Rocks adjacent, deepening to the northward. Hereabouts the bottom is all rocky, with overfalls and rapid tides setting past Setan, 4 and 5 knots, and producing strong ripplings like breakers, which render the ships ungovernable.

Low Rocks.

411. As the Low Rocks are nearly even with the water's edge, the track between them and Setan is not so safe as that between the latter and Keppeh. In this passage keep near Todo Island, rounding its N.E. point about the distance of a mile, for some ships have been in danger of being drifted on the rocks near Setan by the rapid tides. The Northumberland, bound to China, rounded Setan very closely with a spring flood and brisk N.W. wind, in February 1783, when the Low Rocks were seen from the mast-head; she bore up against the tide, and with difficulty cleared them about the distance of a cable's length.

Returning from China, in September 1796, the Britannia, with a fleet of 10 sail, was passing Setan about a mile to leeward, with a southerly wind and strong ebb tide, the helm was then put up and the wind brought on the quarter, but the ship not stemming the tide, and judging by its rapidity that there was a clear channel, she passed between the Middle Rock and Setan. Two ships of the fleet passed to the eastward of Setan, but all the others went between it and Keppeh. The Cornwallis, in August 1796, bound to the southward, found the tide setting strongly to the S.E. on her approach to the westernmost rocks; and after tacking within 100 yards of them she stood S. b. W. close to a line of broken water (probably a strong rippling), which extended 2½ miles to the southward of the rocks. Seeing deep water to the southward, they hauled towards it, worked close round the N.E. point of Todo Island, with a very strong gale at S.E., and passed the eastern rock off Kamara Island, about the distance of a cable's length.

412. Although the tides set rapidly through the middle of the strait, the flood to the northward, and the ebb to the southward, they become much weaker within the edge of the bank of soundings, near the north-eastern part of Sombawa, where there is very little tide in the bays. The rise of tide in Sapie Bay is 10 feet; in Britannia Bay 11 or 12 feet; and it is high water about 1 o'clock at full and change of the moon. *Tides.*

413. The winds are variable in Sapie Strait, forming a kind of land and sea-breeze, those from the westward prevailing in the western monsoon; and during the opposite season, strong breezes blow into the strait from the southward great part of the day. *Winds.*

414. The eastern branch of the strait, between Gili Banta and Comodo, is seldom used, there being no soundings; the passage, however, between Banta and Peak Island is safe, and the latter island is very steep-to; it bears E.S.E. from the S. point, and S. ¾ E. from the E. point of Banta. Several rocks lie between Peak Island and Comodo, and it seems that there is no safe channel inside. *Eastern Channel.*

Opposite to, or about E. from Kamara Island, a small islet lies close to Comodo; it is said that the passage inside of it is safe, and that there is good anchorage in the bays to the southward of it, a cable's length off shore.

No other dangers are known in the southern part of the strait, except a shoal to the southward of Kamara, rather in the bight which this island forms with Sombawa, having only 6 feet water on it, seen in the Ida.

Schoorsteen Island.

415. Contiguous to the S.W. point of Comodo stands a high and bold island, with a nob or upright rock resembling a chimney on its declivity, which renders this island a good mark to reconnoitre the strait in coming from the south-eastward. The W. point of this island bears S. b. E. from Banta Peak, and is in 8° 46′ S. and 119° 25′ E.

416. Ships steering for Sapie Strait, with light variable or easterly winds, may fall in with the W. end of Sandelhout. This island is of middling height, and may be seen in clear weather 9 or 10 leagues, and the peak near its W. end about 20 leagues. The W. point of Sandelhout lies in 9° 42′ S. and 119° 3′ E. With westerly winds, which blow strongly, and produce easterly currents, the S. coast of Sombawa may be approached, as it is mostly high, except opposite to the bottom of the Gulf of Salee, near the middle, where there is a low point, covered with trees.

Entering the strait, bring the E. point of Kamara to the westward of north on account of the Ida shoal, and steer for the passage between Setan and Todo, rounding the N.E. point of the latter island at about a mile distance, to avoid the rocks to the north-westward of Setan, and in order to be the sooner in soundings; the currents not being so strong there, an anchorage may be obtained when the tide is contrary. If during the western monsoon the route through Salayer Strait is to be pursued, borrow towards the E. side of Apie, and keep well to windward, because by the strong easterly current, sometimes of 32 miles in 24 hours, ships are thrown to leeward of the islands fronting the S. end of Salayer, and obliged to pass them to the southward.

In going from Salayer Strait towards the Strait of Sapie, during the south-eastern monsoon, endeavour to fall in with the N. point of Comodo, and pass through the eastern channel, if not in want of water; but in all other cases the western channel seems preferable.

Tiempie.

417. On the S. coast of Sombawa, in about 118° 30′ E., there is a deep inlet or bay, with a narrow entrance. Inside is

a pearl bank, which was thickly covered by the irruption of Mount Tambora. Mr. Zollinger visited this bay, which is called Tiempie, and got a few oysters containing pearls of a small size. He sounded in 2 fathoms in the Narrows; but according to the natives there are 4 fathoms in the basin. Pirates frequent this bay, and they often take shelter inside of Sido and Tengani, the Ragged Islands of the old charts.

CHAPTER VI.

COMODO, NORTH COAST OF FLORES, AND ISLANDS TO THE SOUTH AND SOUTH-EASTWARD OF SALAYER.

North Coast of Comodo.

418. THE N. coast of Comodo and the N.W. coast of Flores were first explored in 1843, by Commander Coertsen's squadron. The N. coast of Comodo forms a large bay; when entering it their first soundings were in 35 fathoms, with the N. extremity of Apie Island N.W. b. W. $\frac{1}{4}$ W., and the N.W. point of Comodo W. b. S. They steered along shore at the distance of about a mile, and sounded in 32, 35, 30, 28, and 25 fathoms, opposite to a bight where the ships anchored.

The steamer Hecla came to in 18 fathoms, hard bottom, with 11 fathoms a cable's length closer in shore, the N.W. point of the bay bearing N.W. b. N., the N. extremity of two islands contiguous to the N.E. point of Comodo N.E. $\frac{3}{4}$ E., and a small islet N.E. $\frac{1}{4}$ N.

It was easy to land, the coast having a slow ascent; and fruit trees were in abundance, particularly tamarind and palm trees. The land abounded with deer.

The next day they passed between two islands off the N.E. point of Comodo; rocks above water being seen in the channel nearest to the southern island, they borrowed toward the northern islet.

Mangerye Strait.

419. The Hecla experienced strong southerly winds at the entrance of the Strait of Mangerye, but the current was so strong that she was drawn in, at the rate of 11 miles an hour, about S. $\frac{1}{2}$ W.; the other vessels, at some distance to the northward, having a light northerly sea breeze. The Strait of Mangerye showed a continued chain of reefs, sandbanks, and islands, with three high peaks, and with apparent channels between them. At 9 A.M. the S.E. extremity of the strait, formed by a high and bold rock, was seen bearing S. b. E. $\frac{1}{2}$ E.; at the same time the S.E. point of Comodo, a bold rocky point

in the shape of a woman's breast, bore S.S.W. $\frac{3}{4}$ W. The course was then altered to N., but the current, which caused violent ripplings and deep whirlpools, was so strong at the time, that the vessel, working with full power, hardly advanced, and could not be kept on its course, veering 4 or 5 points to and fro. After a fruitless search for a passage between the N.E. point of Comodo and the adjacent island (the several islands at the entrance of the strait having been examined by the other ships), they altogether returned through the same channel which they had passed in the morning, and came to an anchor in a bay to the eastward of the former anchorage.

They had regular soundings, from 40 to 15 fathoms, in approaching the shore, and the Hecla came to in the latter soundings, the northernmost of the three islands near the N.E. point of Comodo bearing N. b. E. $\frac{1}{2}$ E. distant about 8 miles, and the N.W. point of the bay N.W. $\frac{1}{2}$ W.

The next day they went again through the passage inside of the outer island, and the Hecla passed to the southward of the northernmost islands of the strait, where she had very irregular soundings, 14, 8, 36 fathoms and more, and she anchored at nightfall in 17 fathoms on the N. side of these islands, together with the schooner Zephyr.

The Resource, Captain W. Bligh, went through the strait bound to the northward August 1789: this, however, appears to be the single case of a ship attempting this most dangerous and intricate passage.

420. H.N.M. steamer Hecla examined, June 1844, Badiak Cove, on the N.W. coast of Flores, and found it quite sheltered by a chain of islands. It is situated in 8° 29′ S. and 119° 50′ E. She entered by the passage to the southward of all the islands, and anchored in 13 fathoms, the S.E. point of the bay bearing S. b. E. $\frac{1}{2}$ E., a point of Flores N. b. E. $\frac{1}{2}$ E., the N.E. point of Kanassir N. $\frac{1}{2}$ E., Badiak between W.N.W. and W.S.W., and the watering place E. b. S. This cove is a perfect hiding-place for pirates, several narrow channels between the islets affording them an easy escape in case of a surprise, and the hills in the vicinity an extensive view to seaward. A run of very clear water, from the foot of a cataract, led into a small inlet about 50 paces long, where *sampangs* can enter to fill the water-casks. The channel leading towards the cove seemed *Badiak Cove.*

to be safe, as no appearance of danger was seen in very clear weather, and the soundings decreased regularly from 29 to 13 fathoms. The cove will be easily found by keeping the northernmost of the islands contiguous to the N.E. point of Comodo W. b. N.

Bay to westward of Bodo Island.

421. There are four islands close to Cape Kandisang, the N.W. point of Flores. Lieut. Hooft's squadron passed in 1844 between this point and the next island in soundings of 35 to 15 fathoms, soft bottom. This channel is only half a mile in breadth, which is reduced by the reefs on either shore to 2 cables' lengths; and the high land, producing squalls and variable winds, renders it a perilous passage. It leads, however, into a spacious bay, near the N.E. point of which lies Bodo Island, in 8° 19′ 30″ S. and 120° 1′ 35″ E. Having cleared the channel before mentioned, the squadron steered N.E. b. E. in irregular soundings, 25, 20 fathoms, and more; the sloop Arend, which was leading, shoaled at once to 3½ fathoms, with the rocks visible under the ship's bottom, the N.W. point of Flores bearing E.N.E. ¾ E.; immediately hauling to the northward her next casts were 15 and 22 fathoms. The Hecla sounded in 18, 13, 9, 6, 18, and 22 fathoms, on the edge of the reef of which the rocks were visible in 9 fathoms. The Arend afterwards shoaled to 3 fathoms on another reef bearing about S.W. from Bodo Island.

Terang Bay.

422. The bays of Terang and Barrie are separated from each other by a point of land to which Longso Island is joined by a reef. The small islet Koko, which has an extensive reef, nearly closes the entrance of the bay of Terang, leaving only two narrow channels between the reefs of Longso and Koko, and between the latter and the reef which stretches along the N.W. point of the bay; farther inside there are some other shoals with soundings of 9 fathoms between them. All the reefs are steep-to, and mostly dry at low water.

Barrie Bay.

423. The anchorage in Barrie Bay is in 12 fathoms N.W. or W.N.W. from the village, but deeper in the bay ships lie better sheltered and more conveniently for watering. Near the entrance of the bay, the reefs on either hand are to be avoided; the reef which surrounds the island of Longso, as well as that which runs off from Barrie Point, are steep-to, and project a considerable distance. H.N.M. brigantine Dol-

phyn anchored in 14 fathoms mud, Longso bearing from N. ½ E. to N.W. by W. ½ W., and the E. point of the bay N.N.E. ¾ E. The depths in the bay decrease regularly to 3 fathoms at half a mile from the mouth of Kokoro River, which is closed at low water by a sandbank. Inside the river there are 1½ fathoms, and good water for drinking may be got about 4 miles upward.

In 1847 a colony of about 200 Bimanese was settled here, in order to keep away the pirates from this sheltering-place.

North-west coast of Flores.

424. H.N.M. steamer Vesuvius, bound to Barrie Bay in 1847, grounded on a reef, the W. point of Bodo bearing S. b. W. distant about 2 miles, Koko S.E., the S. point of Longso E.S.E. ½ E., and the W. point of Seraia Island W.S.W. ½ W.; when aground she had 2 fathoms ahead and under the paddle-boxes, 3 fathoms under the stern, deepening rapidly to 3½, 6, 8, and 22 fathoms, and the sheet anchor having been carried out in the latter depth, she was got off at high water.

Commander Coertsen's squadron discovered several dangers to the northward of the islands of Seraia and Bodo, and off Terang and Barrie Bays, but their positions were not well ascertained.

The following is an extract of the Hecla's log-book :—

"May 8th, 1843.—7h. 50m. A.M. struck soundings in 18, 12, 6, and 5 fathoms, with the rocks visible under the ship, the first island to the eastward of Bombee Point bearing E. b. S. distant about 6 miles, and a low island S.W. b. W.; chronometers showed long. 120° 3′ E.; hauled north-eastward, deepened to 30 fathoms, and at 8h. 15m. steered E. b. N. At 9h. 20m. saw discoloured water, sounded 20, 4, 3¾ fathoms, edged out N.E. till in deep water; the boats sounded in 2 fathoms, the least water on the shoal, about a cable's length from the ship.

"When on the edge of the reef, Bombee Point bore S.S.E., an island contiguous to it S.E. b. E. ½ E., another W.S.W.; chronometers showed 120° 7′ E.

"Steered for the E. point of the third island to the eastward of Bombee Point, where apparently clear water was seen behind a great reef which surrounds this island, and to the eastward of which, the pilots say, is the entrance of the bay. The boats sounding ahead came repeatedly into 4 and 2 fathoms on the edge of the reef.

"At 11 A.M. the first island to the eastward of Bombee Point bore S. b. E. $\frac{3}{4}$ E.; soon afterwards the bay opened."

H.N.M. schooner Zephyr saw a reef in a transit bearing with a small islet S.E. b. E. distant one mile; at the same time the N. peak of Apie Island bore W. $\frac{3}{4}$ N., and the extremity of the land visible of Flores E. b. S.; she made this shoal in lat. 8° 19′ S.

The reef on which the Hecla struck soundings at 7h. 50m. A.M. is probably the same as that on which the Vesuvius grounded, and the second the reef which extends to the northward of Koko Island. The dry spot on the same reef is perhaps what they call the second island; and the third island, surrounded by an extensive reef, on the edge of which the boat sounded, cannot be else but Longso Island. In the charts of Lieuts. Gevers and Koning another reef is laid down to the northward of Seraia; it is therefore advisable not to approach the N.W. coast of Flores during the night, and to keep a good look-out from the mast-head in the day-time.

Reo Bay. 425. The Bay of Reo, so called after the village which stands on the S.E. shore in 8° 15′ S. and 120° 32′ E.,* is bounded to the westward by a high and bold point called Bessie, and to the eastward by Kediending Point; reefs run off both points about half a mile, and there is a dry sandbank opposite to the *Yzer River.* mouth of Yzer River. The bottom is very steep, and the anchorage in from 30 to 7 fathoms, close in shore. The Hecla anchored in the latter depth, Bessie Point bearing N.W. b. W., an inner point W. $\frac{1}{2}$ N., the entrance of Yzer River S.W. b. S., the E. point of the bay N.E. $\frac{3}{4}$ E. The Dolphyn anchored in 18 fathoms, mud, in the S.W. part of the bay near the entrance of a river between reefs which project from the shore, the points of the bay bearing N. $\frac{1}{2}$ W., and E.N.E. $\frac{3}{4}$ E.; she had no bottom at 30 fathoms between the points of the reefs, and the boat sounded inside the anchorage 15, 11, 5, and 3 fathoms, nearly up to the beach.

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* According to the observations of

		°	′	″		°	′	″	
Lieut. Hooft's squadron, 1844, in	8	16	0	S.,	120	31	50	E.
H.N.M. steamer Merapie, 1845, „	8	15	30	„	120	32	30	„
„ brigantine Lansier, 1846, „	8	15	15	„	120	32	40	„
„ „ Dolphyn, 1847, „	8	16	30	„	120	33	30	„

The Yzer River is navigable for proas far upwards, and the stream carries down a considerable quantity of iron ore and also some gold dust.

Potta Road.

426. The road of Potta, in 8° 18′ S. and 120° 47′ 15″ E., is bounded to the westward by Cape Baya, a bold point bearing due east from Bessie Point. The shore is here so steep-to that in some parts no bottom is felt with 50 fathoms at 2 cables' lengths outside the reef which lines the beach. The anchorage is in 18 fathoms. Cape Baya, bearing N.W. b. W. $\frac{3}{4}$ W., Potta village N. b. E. $\frac{3}{4}$ E., Passier Point (the E. limit of the bay) N.E. $\frac{1}{4}$ N.

Dangers on the North coast of Flores.

427. The Dutch bark Diederika, Captain J. J. Kingdom, in 1847, at 6 P.M., saw breakers bearing S. $\frac{3}{4}$ E., distant half a mile; a high promontory which overhangs to the westward in about 8° 26′ S. and 121° 14′ E. bore S. b. E., a saddle S.S.E., two peaks forming a cock's comb S.E. $\frac{1}{2}$ S., the westernmost of a group of islands close to the shore W. $\frac{1}{4}$ S., and the western extreme land, a low point, W. $\frac{1}{2}$ N.; lat. deduced from the noon observation 8° 21′ S., and long. by chronometer 121° 13′ 30″ E., about 4 miles off the shore.

The Krokodil, at noon, September 19th, 1838, saw a small sandbank bearing S.E. about 8 miles, lat. observed 8° 22′ 40″ S., when this danger was S. distant 1 mile Paloweh Island bore E.N.E. This sandbank lies about 6 miles off shore, is surrounded by rocks, and extends E. b. N. about 2$\frac{1}{2}$ cables' lengths.

Paloweh Island.

428. Paloweh is a high island and bold to approach; the peak is situated in 8° 19′ S. and 121° 42′ E. The channel between it and Flores is about 6 miles wide; the coast of Flores to the southward may be known at a great distance, as it consists of high white rock. H.N.M. steamers Hecla and Merapie found this channel to be safe.

Linguette.

429. Linguette or Soekoer Island has a high sharp peak near the E. point, and a hill on its S.W. declivity; the summit of the peak lies in 8° 6′ S. and 122° 8′ E.* There is no anchorage near this island, and the reefs projecting from the N.W., S.W., and S.E. points are of little extent; there is a rock above water with a single tree on it on the reef off the S.E. point.

* These longitudes of Paloweh and Linguette Peaks are the results of chronometric observations by eleven different Dutch vessels.

Doffer and Bastaard Islands.

430. The Doffer and Bastaard Islands were examined, 1844, by the steamer Hecla and schooner Zephyr. The two Doffer Islands are joined by a reef; they appear at a distance as three islands, the middle part of the westernmost island being low. From the W. point of West Doffer, Linguette Peak bears N.W. b. N. nearly.

The Bastaard Islands are high, particularly the Great Bastaard. The mountain on the S. part may be known by two ravines. Close to the eastward of it lie six small islets, and to the north-eastward of the easternmost of these, the East Bastaard. The coast of Flores to the southward and eastward of this group forms several deep bays, and one of its low points approaches close to the islets to the eastward of the Great Bastaard; the channel between these islands and the point is nearly a mile wide, and the two easternmost islets are joined to each other by a reef. The ships went through this channel, and approached close to the East Bastaard, which has a reef running off to the westward; from thence they steered north-eastward along the coast of Flores, 1 or 2 miles off shore. This coast forms several deep bays, and has the appearance of a wall in decay. Nowhere anchorage was found among these islands; it would therefore be dangerous to cruise among them in a sailing vessel. Macassar proas frequent these places, as there is much tripang there, but they are often annoyed by the pirates, who also carry off the inhabitants of Flores.

Flores Head.

431. The N.E. extremity of Flores is a high and steep promontory of considerable extent, called Flores Head, situated in 8° 4′ 45″ S. and 122° 50′ E.*

Angelica Shoal.

432. Lieut. Hooft's squadron approached the southern edge of Angelica Shoal or Passier Layer-an within a mile, May 3d, 1844. At noon, the Arend had the reef bearing E. b. N. to N.W., Linguette Peak S.S.W. $\frac{3}{4}$ W., Palowch Peak S.W. $\frac{1}{4}$ W.,

								″	′	°
* Dutch frigate	Marie Rygersbergen			in 1805,			-		- 122	46 0 E.
British ship	Castlereagh			- 1808,	in 8	5	0 S.,		123	2 0 „
,	Sibbald		-	- 1816,			-		- 122	48 0 „
Dutch frigate	Ajax		-	- 1834,			-		- 122	59 0 „
„	Zaan		-	- 1837,			-		- 122	56 0 „
„	Hippomenes			- 1838,			-		- 122	56 4 „
„	Triton		-	- 1838,	in 8	1	0 „		122	51 30 „
Dutch sloop	Panter		-	- 1839,		8	4 0 „		122	51 20 „

Flores Head S.E. b. E., $\frac{3}{5}$ E. lat. observed 7° 48′ 39″ S., and had no soundings in 80 fathoms; but the Janus sounded in 19 fathoms, about half a mile to the W.N.W.-ward; the reef seemed to extend E.S.E. about 3 miles, and appeared to be about half a mile broad near its extremities, which are nearly even with the water, but only 2 cables' lengths near the centre.

The Haai ran aground during the night, near the S.E. point of this shoal, but was got off at the next springs, after having thrown overboard her guns, water, &c. When aground, she had 6 feet near the bow, 2 fathoms at the rudder, and 40 fathoms on the edge of the shoal about two ships' lengths to the N.N.E.-ward; Flores Head bore S.E. b. E. $\frac{1}{2}$ E., Ilimandri Peak S.E. $\frac{1}{2}$ E., Lobetobie Peak S.S.E. $\frac{3}{4}$ E., Linguette Peak S.S.W. $\frac{3}{4}$ W., Paloweh (indistinctly seen) S.W. $\frac{1}{4}$ W., and Toca N.W. b. W.; lat. observed 7° 48′ 30″ S.

The reef appeared to extend about 4 miles, and is divided by two narrow channels, which traverse it in a N. and S. direction, with some dry rocks on the centre.

Bangalore. Shoal.

433. Bangalore Reef, on which the ship Bangalore, from Amboina, bound to Allas Strait, was wrecked in 1802, is said to extend N. and S. about 3 miles, and in breadth 2 miles, and to be dry at low-water on the western part, with rocks resembling proas under sail. From the wreck on the shoal, Flores bore from S.W. to E.S.E., an island forming like a dome S.S.W. distant 7 or 8 leagues, and an island (supposed to be Schiedam) N.W., distant 8 or 10 leagues. It is very probable that the ship was lost on the W. part of Angelica Shoal, as Linguette appears at a distance like a dome.

Group of Islands S.E. of Salayer.

434. Commander Coertsen's squadron explored the group of islands to the S.E. and southward of Salayer in 1843, and drove the pirates out of their sheltering-places among these islands, but after they had sustained a severe loss in several engagements. Since then the Dutch cruisers have had several successful engagements with them, and have now succeeded in clearing this group of pirates.

The easternmost islands of this group and of the Tyger Islands (the latter of which are quite unknown) are Kobona or Postpaard, in 7° 25′ S. and 122° 6′ E., with a reef projecting about $1\frac{1}{2}$ miles from its E. point, and Baars Island in 6° 56′ S

and 122° 15′ E. The latter was discovered in 1845, by W. T. Baars, Commander D.R.N.

Madoe and Toca Islands.

435. Madoe or Pandiang Island, in 7° 28′ S. and 121° 46′ E., is separated from Toca Island by a channel of 3 miles in breadth. Reefs, with much discoloured water and steep-to, run off the points, on the W. coast of both these islands; the channel between them is free from dangers. H.N.M. brigantine Lansier anchored, May 1846, on the reef fronting the village on the N.W. coast of Toca, which had been destroyed in 1843; it is very dangerous to anchor there, the reef being very steep-to. The Hecla had no bottom with 90 fathoms line, while a gun boat was lying on the reef only a cable's length closer in shore. There are several islands and dangers to the N.W.ward of Toca, which are said to extend almost to the islands Latonda and Salayer and far to the northward, although it appears that there is a passage along the coast of Salayer, as in 1806 an American vessel from Allas Strait proceeded along the S. and E. coasts of Salayer.

Anchorage near Bonerato.

The inhabitants of Bonerato and Toca seem to live in friendship with the pirates. In 1843, H.N.M. cruisers engaged and destroyed a large piratical fleet in the strait of Bonerato. The anchorage near the town on the W. side of Bonerato is in a steep bottom. The steamer Hecla anchored in 9 fathoms, the N.W. point of Bonerato bearing N. b. E., the town S.E. b. S., Teterang Island, which is joined by a reef to the S.W. point of Bonerato, S.W. $\frac{1}{4}$ W., the N.W. point of Kalao N. b. W. $\frac{1}{4}$ W., and the village Lambego on the latter island N.W. $\frac{1}{4}$ N.; lat. observed 8° 19′ S., long. by chronometer 121° 7′ E. The reefs which line the W. coast of Bonerato project in some parts of the bay about 4 cables' lengths from the shore.

The strait between Bonerato and Kalao is safe. Kalao is a mountainous island, most elevated at each end; a reef, which is partly dry and ranging from 12 fathoms, runs off the W. point in a W.S.W. direction about 5 miles.

Marianne Shoal.

436. The Dutch brig Marianne was wrecked, in 1820, on a reef in 7° 27′ S. and 121° 13′ E., extending about 5 or 6 miles E. and W., and 3 or 4 miles N. and S., having rocks above water on the southern part. From the wreck, Kalao and Bonerato bore from N. to N.W. b. W. $\frac{1}{2}$ W., and Madoe E. b. N.

H.N.M. sloop Arend made the S.W. point of this shoal in 7° 33′ S. and 121° 9′ E. When Bonerato bore from N. ¼ W. to N.W. ½ N., the N. point of the reef bore E. and its S.W. point S. ¼ E.; she had then no bottom at 90 fathoms; her boat sounded in 3 feet on the reef and 17 fathoms close to its edge.

437. About midway between this reef and Madoe lie two small islets, called Kajoe, which are surrounded by a reef. *Kajoe.*

Dyampea is the largest island of this group; it has a rugged appearance, and terminates to the eastward in a low point; there is an extensive reef on the N. side of this island, with overfalls from 30 to 5 fathoms, on which the boats of the squadron sounded; and, according to the pilots, it has no shoaler patches. The Hecla intended to pass to the northward of Dyampea, as the pilots asserted that there is a passage between Kasuarie and Batoe. Approaching the reef, the soundings decreased fast to 8 fathoms, and increased to 26 fathoms to the N.E.ward; but soon afterwards the rocks were clearly visible under the ship, and the soundings decreasing to 15 and 9 fathoms, she came to in the latter depth, Dyampea bearing from W. b. S. to E. ¾ S.; Badiah, a low island, S.E. ½ S., Batoe S.E. ¼ S., Kasuarie (also low) E. by N., and Kajoeadie from N.N.E. to N.E. ¾ N. The W. coast of Dyampea is lined by a reef, partly dry, and with several islets. The channel between the W. coast of Dyampea and Sisir, which is a low and long island, was found to be safe. Within 1 or 2 miles of the S. coast of Dyampea there are soundings in 45 to 20 fathoms. *Dyampea.*

438. Kambarraghie Bay, on the S. coast of Dyampea, formed by a projecting point of the land and by several islets which front the S. coast, and inside of which there are passages for proas, was much frequented by the pirates. H.N.M. steamer Phœnix anchored here in 10 fathoms, with a rocky islet at the entrance of the bay, bearing W., and the S.E. point of the bay S. by E. ½ E.; steamers may safely run far into the bay, as the soundings decrease regularly. Good water is to be got in the river, and the landing is easy a little to the southward of the bank which fronts the river. The bay is environed by picturesque mountains, covered with canary and other kind of high trees, and it is considered safe in both monsoons. *Kambarraghie Bay.*

439. H.N.M. steamer Merapie, in 1845, entered Maringi Bay, which is 5 miles farther to the eastward, at the eastern foot of *Maringi Bay.*

the peak of Dyampea. She anchored in 16 fathoms, sand, t heW. point of the bay bearing W.S.W. $\frac{3}{4}$ W., the peak N.W. $\frac{1}{2}$ W., and a village N. $\frac{1}{4}$ W. Towards the village, the boat had regular soundings till in 7 fathoms, then 11, $5\frac{1}{2}$, 10, 9, 6, 7, 5, 3, and $1\frac{1}{2}$ fathoms close to the beach.

There is a deep inlet or strait in the N.W. part of the bay, with 10, 9, 6, 4, and 3 fathoms at the entrance. According to the pilots, there is a dangerous patch in the N.W. part of the bay.

Dangers westward of Dyampea.

440. H.M.N. Schooner Zephyr saw a dry sandbank to the westward of Sisir Island, the E. point of which bore S. b. E. $\frac{1}{2}$ E., when the extremities of Dyampea bore S.E. b. E. $\frac{3}{4}$ E. and S.E. b. S., Kajoeadie bearing between E. b. N. and E.N.E. $\frac{1}{2}$ E., Roessa in one with Tambelaoeang N. $\frac{1}{2}$ W., Sisir S.E. $\frac{1}{4}$ E.; and H.N.M. sloop Postillon had this bank in a line with Sisir E. b. N.

H.N.M. steamer Hecla, at noon, July 8th, 1843, struck soundings in 9 fathoms on a reef, in lat. 7° 4′ S., with Sisir bearing N.E. $\frac{1}{2}$ E., and Bimbee (contiguous to the S.W. point of Dyampea) E. $\frac{1}{2}$ N.

H.N.M. schooner Circe ran over this shoal during the night, and got soundings in 5, 4, $3\frac{3}{4}$, 4, 5, 7, 9 fathoms, and then no bottom. When on the reef the extremes of the land, visible in clear moonlight, bore N.E. b. E. and E.S.E. $\frac{3}{4}$ E. The Hecla passed close to its southern edge, in soundings 35, 27, 32, and 25 fathoms, and afterwards between this reef and Sisir and the sandbank to the westward of this island, the sea breaking heavily on the bank, in 35 fathoms least soundings.

Mamalak Island.

441. Mamalak Island, in 6° 40′ S. and 120° 16′ E., is the westernmost island of this group; it is surrounded by a reef, and the channel between it and Roessa and Tambelaoeang is dangerous, although the squadron came through it in 1843.

Dangers.

H.N.M. schooner Zephyr anchored on the S.E. edge of a reef in $4\frac{1}{2}$ fathoms, with Mamalak bearing N.W. b. W. $\frac{1}{2}$ W., the S. point of Roessa E. $\frac{1}{2}$ S., the N. point of Tambelaoeang N.E., S. point of Salayer N.E. $\frac{1}{2}$ N., and Baoelaoeang N.N.E. $\frac{1}{2}$ E.; she afterwards anchored in $2\frac{1}{2}$ fathoms, on a rocky shoal, from which Mamalak bore W. b. S.; S. point of Salayer N.E. $\frac{1}{2}$ N., and the S. point of Roessa E.S.E. This shoal extends E.S.E. and W.N.W. about a cable's length, with only 6 or 7 feet water in some parts. H.N.M. sloop Postillon struck on a shoal between these islands, and sustained some damage.

442. The channel between Mamalak and the Postillon is 19 or 20 leagues wide, without dangers, and is the usual track of ships from Sapie Strait bound to the Strait of Salayer or Macassar. *Sailing Directions.*

During the eastern monsoon ships will experience here a daily set of the current to the westward, from 16 to 30 miles, and during the western monsoon it runs with rather greater velocity to the eastward. Ships working towards Macassar during the eastern monsoon should bring Apie Island to bear S.S.W. or S.W. b. S. before they cross over; and during the western monsoon it is often very difficult to weather the strait of Salayer after having passed through Sapie Strait, on account of which the passage through the Strait of Allas is now generally preferred.

The route along the coast of Flores and to the northward of Paloweh and Linguette is generally adopted by ships bound from Sapie Strait to Pitts Passage, and also by ships bound to Amboina late in the monsoon, in March or April, or returning from there in June, July, and August. It is prudent not to stretch over far to the northward on account of the islands and dangers before mentioned, and of some others which are doubtful.

CHAPTER VII.

South Coast of Flores, Sandelhout, and Savou Islands.

443. As the trade on the south coast of Flores is carried on exclusively by proas, and the trade with Sandelhout Island being of little importance, the strait between these islands is seldom frequented, unless by ships navigating between Singapore or Java and Timor or New Holland.

Rindia Island. 444. The Strait of Mangerye lies between Comodo and Rindia, an uninhabited island, which abounds with wild buffaloes and horses, and was considered till lately to be a part of Flores.

There is a deep bay in the south coast of this island in 119° 42′ E., but the boat of the Cuddalore found it full of reefs and rocks, and without soundings, unless close to the shore.

Molo Strait. 445. Molo Strait separates Rindia from Flores; its entrance may be easily known by a high island in 8° 46′ S. and 119° 47′ E. as laid down by the observations and bearings taken on board H.N.M. frigate Boreas, 1838. Captain Dalrymple, of the British schooner Cuddalore, in March 1761, bound to the eastward along the south coast of Flores, met with continued calms and baffling easterly airs and westerly currents, which made him lose ground daily, and being short of water he entered this strait in search of a watering place. We are indebted to him for the survey of the Alligator and Mangrove bays on the S.W. coast of Flores, in Molo Strait.*

Alligator. 446. Alligator Bay is formed by a neck of land projecting to the southward. The S.W. point of this bay is low and green, and the S.E. point may be known by a perpendicular black cliff, to the south-eastward of which there is a low point, with a remarkable hole in a rock, appearing from the seaside like a sail. The bay is $2\frac{3}{4}$ cables' lengths broad, by half a mile in length, and a considerable stream or river falls into the sea

* See Plans.

in its N.E. part, where there is a steep bank, extending about a cable's length from the river's mouth; the beach is steep-to in every part of the bay, and no other dangers exist. The soundings decrease regularly from 50 fathoms at the entrance to 26 fathoms in the centre of the bay, and to 13 fathoms close to the edge of the bank fronting the river, to the westward of which there is also considerable depth of water. The bottom consists of sand, here and there mixed with coral. The Cuddalore anchored in 30 fathoms, fine sand, with Green Point bearing S.W. ½ W., and Bluff Point in one with Brown Point, the point with the hollow rock S.E. Although the tides were nearly imperceptible, the rise of the water was observed 12 feet at the springs.

447. The south point of Mangrove Bay may be known by a brown spot near its extremity, and the north point has a green appearance. Then follows to the northward a bold, rocky, and wooded point, and the next point is high and overhanging. The cove is fronted by two islets, the outermost of which has a saddle hill. Keeping the shore on either hand at equal distances, you may run in nearly to the head of the cove, where a river with good water falls into the sea. The depths are pretty regular, from 17 to 5 fathoms, coral and sand bottom, but the greatest depth is towards the southern beach, and the points are steep-to. *Mangrove Bay.*

The only danger which was discovered in the strait is a coral reef, with 6 feet water over it, the east point of Saddle Island bearing north, and the point with the brown spot N.E.*

448. The S.W. point of Flores appears at a distance as an island, and is situated in 8° 51′ S. and 119° 58′ E. The land falls back north-eastward and forms a bay, near the east point of which lies Toren (tower) Island, easily known at a great distance by a sugar-loaf peak standing near its western extreme in 8° 52′ 30″ S. and 120° 13′ 30″ E. This island has a sandy beach lined by rocks, with 40 fathoms water close to. *Toren Island.*

449. The coast then forms a more extensive bay, terminating in the southernmost point of Flores, on which stands the sharp *Rokka Peak.*

* It is not known that any vessel has entered this strait since 1763, and it is very probable that the local appearances have greatly changed.

peak of Rokka, in 8° 54′ S., and 120° 59′ E.,* which has been seen at the distance of 31 leagues; and in 8° 50′ S. and

Romba Peak. 121° 13′ E. stands the high volcano of Romba Peak. The land hereabout is imperfectly known; it appears to be fruitful and well peopled, but the inhabitants are said to be uncivilized and savage. Along the shore a great surf was observed by the steamer Hecla, and she ran into discoloured water when in chase of some proas, Romba Peak bearing N.E. and the extremities of the land E. $\frac{2}{3}$ S. and W. b. N., half a mile off shore.

Ende Bay. 450. Ende Bay is formed by the high isthmus of Apie Head, and bounded to the westward by a bold point in long. 121° 24′ E., according to H.N.M. frigate Boreas, 1838. Ende Island, opposite to the centre of the bay, has the shape of a gunner's quoin, with the highest part turned towards the south; and appears at a distance as a projecting point of the land. The Boreas destroyed, in May 1838, the large village of Ambogaga, to punish the inhabitants for their piracies; but when the Hecla visited the bay in 1844, the village was rebuilt.

Apie Volcano. The neighbouring volcano of Apie is situated in 8° 54′ S. and 121° 41 E., according to the Boreas; its crater is on the south side, and the eruptions are frequent; the mountain is covered with sulphur and ashes, without any vegetation, and a high sugar-loaf rock rises about half way up its side.

Ambogaga Bay. 451. The coasts here are steep-to on all sides; near the southern beach of the bight of Ambogaga the first soundings in 36 and 26 fathoms are within 2 cables' lengths off shore. The Boreas anchored in the latter depth, the Island of Ende bearing from W. $\frac{1}{2}$ N. to S.W. b. W. $\frac{1}{4}$ W., the S.E. point of the bight S. b. W. $\frac{1}{2}$ W., the top of Apie Head S. $\frac{1}{4}$ E., 370 yards off shore, and the boats found 2 fathoms about 55 yards from the beach. The rise of tide is 9 feet, although its movements are nearly imperceptible. Water is scarce, as well in the village as in the river of Braai. Proas find shelter from westerly winds on the N.E. side of Ende, where good anchorage is found opposite to the ruins of a Portuguese fort, and water may be had there.

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* H.N.M. frigate Boreas, March 1838, made Rokka Peak in 120° 58′ 35″ E.
" " June 1838, " " 120 59 16 "
" steamer Hecla " 1844, " " 120 59 0 "
" sloop Arend " 1844, " " 121 0 14 "

Mountains on the South coast of Flores.

452. The bay to the eastward of Apie Head has not been visited, but it is supposed to be safe during the western monsoon. From hence the coast stretches about E. b. N., with many remarkable mountains inland, among which the principal are a high volcano in 8° 49′ S. and 121° 54′ E.; a lofty peak near the shore, which may be distinguished at a great distance in coming from the westward, in 8° 48′ S. and 122° 5′ E.; a mountain with a flat top, in 8° 44′ S. and 122° 25′ E.; and Lobetobie, the northern head peak of which forms a sugar-loaf, in 8° 32′ S. and 122° 47′ E. according to the Boreas, while the southern one is round and extensive.

Sandelhout.

The N.E. coast of Sandelhout, or Tanna Tyumba, or Sumba, was visited in April and May 1845 by the officers of H.N.M. schooner Egmond.

This coast offers a very monotonous view, showing a calcareous wall with a nearly level top about 1,200 feet high, and from 2 to 6 miles inland, covered with long grass, and only here and there a few bushes or single trees. At Palmedo, Sassa, and Tapi Points the land has a more regular aspect, and the hills about Roeboe are rather elevated parts of the wall, but those near Nangamessie and Palmedo are peaked. The east part of Sandelhout * appears to be a plain covered with grass and bushes, and gradually sloping down towards the low points Tapi and Mandieli.

Reef from Tapi Point to Mandieli.

453. From Tapi Point to Mandieli the coast is covered by a reef projecting about 4 miles, with an island upon it, formed by some flat rocks about 25 feet above water, called Mano. H.N.M. schooner Egmond had soundings in 6, 10, 14, 13, 11, 12, 9 fathoms, and then no bottom at 15 fathoms, along the edge of this reef. The Lansier, in 1847, struck on this reef, and was only saved after the greatest exertions; it dries at low water. When on the rock the extremes of Sandelhout bore S.W. $\frac{1}{2}$ S., and N.N.W. $\frac{3}{4}$ W., and Mano N.N.W., the chronometer showed 120° 57′ E. When in $4\frac{1}{4}$ fathoms, after she was off, Sandelhout bore from S.W. $\frac{1}{4}$ W. to N.W. b. N., and Mano N.N.W. $\frac{1}{4}$ W.; when in 6 fathoms, the extremities of Sandelhout bore S.W. southerly, and N.W. b. N., and Mano

* Captain Ashmore made the E. point, 1822, in 120° 52′ E., and in 1827 in 120° 53′ E.

N.N.W. $\frac{1}{4}$ W. She weighed and steered E.N.E., soundings increasing fast to 8, 10, 12, 20 fathoms, and 24 fathoms no bottom. When about 3 miles from the anchorage shoaled suddenly to 5 and $4\frac{1}{2}$ fathoms, anchored immediately, Tapi Point bearing N.W. $\frac{1}{4}$ W., Mano N.W. $\frac{1}{2}$ W., Poeroe Point S.W. $\frac{1}{2}$ W., and Peramon Point a little more southerly; chronometers showed 120° 59′ E. The boats sounded all round in $4\frac{1}{2}$ fathoms, the least water on the shoal. Inside the reef on which the Lansier struck, there is said to be a passage used by coasters.

Kedoembo. 454. H.N.M. schooner Egmond anchored in the road of Kedoembo in 15 fathoms, Rokka Peak bearing N.N.E. $\frac{1}{4}$ E., Atta Point N.W. $\frac{1}{2}$ N., and Kedoembo Point E. $\frac{1}{4}$ S.; the latter and Petawang Point are covered with palm-trees and brushwood. H.N.M. frigate Argo, July 1841, anchored here, with the points of the bay bearing N.W. and E. $\frac{3}{4}$ S., $1\frac{1}{2}$ cables' lengths off shore, and made this place in 9° 40′ S., and 120° 34′ E.

Nangamessie. 455. Nangamessie Harbour, in the bay between Atta and Mandolo Points, is formed by reefs projecting from the shore, which are steep-to and mostly dry, and by a detached reef, with only 1 and 2 fathoms water over it, on the east side of the entrance, which is separated by a narrow but deep channel from the rocks of the shore. The space between the reefs is 1 or 2 cables' lengths.

The Egmond anchored here in 16 fathoms, Rokka Peak bearing N.E. $\frac{1}{4}$ N., Mandolo Point N. by W. $\frac{1}{2}$ W., the river's mouth S.W. $\frac{1}{2}$ S., the east point of the harbour E. $\frac{3}{8}$ S., and Nangamessie Point E. $\frac{1}{4}$ S. It is easy to water here; high water at full and change of moon at 11 or 12 o'clock; rise of tide 9 to 12 feet at neap tide, and 15 to 18 feet on the springs, although the current is nearly imperceptible; ebb and flood change twice in 24 hours.

Tides.

There is another good berth in 16 or 18 fathoms, opposite to the village Taimano, between the reef which lines the shore and a detached reef, with 1 and $2\frac{1}{2}$ fathoms water over it, and 5 fathoms on its edge, at once deepening to 12 or 14 fathoms; but there is rather less space there than in Nangamessie harbour.

Mandolo Point and Cape Roeboe are bold, and Cape Sassa rises nearly perpendicularly to a height of 250 feet on its north and west sides.

456. The entrance of Palmedo river bears S.W. b. W. $\frac{1}{4}$ W., about 12 miles from Cape Sassa; boats drawing from 5 to 7 feet can enter at high water. The road may be known by the Kron Berg, which is the highest point of the back land, and the top of which is wooded and peaked; and farther to the westward another woody peak of about the same height will be seen. The Egmond anchored near this river in 14 fathoms, with the Kron Berg bearing S. b. E. $\frac{3}{4}$ E., and the other hill (Merk Berg) S. $\frac{1}{2}$ W., about two-thirds of a cable's length outside the reef which lines the shore and projects $1\frac{1}{2}$ cables' lengths to the north-eastward of the river. The first soundings in 40 fathoms are half a mile off shore, and decrease regularly towards the anchorage. It is easy to water here; ebb and flood change twice in 24 hours, running $2\frac{1}{2}$ or 3 knots, and the rise is 15 feet. Mombora, the west point of the road, is low and flat, and covered with bushes. *Road of Palmedo.* *Tides.*

The N.E. coast of Sandelhout may be approached within 1 or 2 miles, with the exception of the east point of the island. From seaward no villages are visible except Lenna, near Palmedo, and Taimano, near Nangamessie.

457. There is a high peak in the west part of Sandelhout, which may be seen about 20 leagues, and most part of the south coast is seen at the distance of 9 or 10 leagues. The west point of the island, called Reef Point on account of a great reef projecting from it, is in about 9° 24′ S. and 119° 3′ E., bearing S. b. W. $\frac{1}{4}$ W. from the southern entrance of Sapie Strait; there are soundings near Reef Point, in 30 to 60 fathoms, about 3 or 4 miles off shore. *West Point of Sandelhout.* *Reef Point.*

458. The South Point of Sandelhout is in 10° 20′ S. and 120° 32′ E., according to Captain Blackwood, of H.B.M. ship Fly, and as high and inaccessible as the rock of Gibraltar, with a low connecting land-tongue, on either side of which lies a spacious bay. The west one seems to be well sheltered by the islands fronting the point, but there are no soundings 3 or 4 miles off shore. *South Point.*

According to Mr. Gronovius, of Koepang, there is a safe harbour sheltered by reefs from all winds on the middle of the south coast, near the populous village Tida. There is also safe anchorage near Treba, and in the spacious bay of Wedielo, near the south end of this island. *Tida, Treba, and Wedielo.*

Savou Islands. 459. The channel between Sandelhout and Savou is about 15 leagues wide, and has no other dangers than the reef which projects far from the east point of the former island, and which has proved fatal to several ships from the incorrectness of the charts.

The French frigate Coquille, in 1823, made the north point of Savou Island in 10° 25′ S. and 121° 52′ E., and the hill on Hockie Island in 10° 49′ S. and 121° 16′ E.

Savou may be seen 7 or 8 leagues distance; it has a sandy and barren aspect, and Banjoar is low and wooded.

Banjoar.

H.N.M. schooner Egmond anchored, in 1845, in the bay of Seba, on the west coast of Savou, in 22 fathoms, the N.W. point of Banjoar bearing S.W. b. W., ¾ W, Mesara Point S.W. b. W., Seba Point N. b. E. ¼ E., breakers on the edge of the reef running off the latter point north, and the village Mambo standing on a rock near the beach S. b. E.

Sailing Directions. 460. Ships late in the monsoon bound to China, and passing St. Paul and Amsterdam islands in the latter end of September, October, November, or December, generally proceed through the Ombay passage. They ought to make the east point of Sandelhout, and to pass between it and Savou, or between the latter and Rotti, if they fall to leeward with N.W. or westerly winds. In former times it was usual to steer for the west end of Sandelhout, and to pass between it and Flores; but the route to the eastward of Sandelhout is preferable, particularly with variable winds, nor can it be required to pass to the westward of Sandelhout unless the wind blows strong from the north-westward with a lee current, then it may be desirable to pass to windward.

Currents. 461. In July, a current of 20 miles in 24 hours has been experienced to set to the westward along the south coast of Sandelhout; and d'Entrecasteaux observed currents of 24 miles setting to the west and west north-westward, the wind being variable and light from S.S.E. and S.S.W.

H.N.M. frigate Boreas observed easterly currents along the south coast of Flores from the middle of March to May and June; while the Arend and Circe, in other years, found the current there nearly imperceptible, and sometimes setting to the eastward.

CHAPTER VIII.

Straits between Flores and Ombay.

462. The several straits between Flores and Ombay Islands are narrow, and subject to strong currents and frequent calms, succeeded by heavy squalls from those high mountainous islands, and are therefore but seldom used. In 1797-8, however, a fleet of six English ships, bound to China, went through the straits of Lobetobie and Flores, and afterwards several vessels, which could not fetch the Ombay passage on account of strong contrary currents, passed through the same straits. *Passages eastward of Flores.*

The straits of Flores, Solor, and Lamarkwera, or Zemandro, are often used by the Dutch vessels of war bound to Timor, and it seems that formerly the strait of Bolling, or the Dutch Gat, was mch frequented. The straits of Alloo and Pantar are very intricate, very deep, and infested with strong currents.

463. The strait of Flores, between the east coast of that island and the W. coasts of Solor and Adenara, stretches N.N.E. and S.S.W., about 12 leagues. The southern part of the strait, along the coast of Solor, is generally called Lobetobie Strait, and the northern part the Gat of Larantuca. The narrowness of these straits and their strong currents make it unadvisable to resort to them unless in case of necessity. *Flores Strait.* *Solor Strait.* *Larantuca Strait.*

If intending to pass through the Strait of Flores during the western monsoon, after passing Sandelhout haul in for the coast of Flores, and approach it pretty closely. In coasting to the eastward Hoog, a high round island in the mouth of the strait, must be passed on the W. side. The island is in about 8° 40′ S., and 122° 51′ E., and is steep-to, having no ground near it at 90 or 95 fathoms. There is a ledge of rocks a little to the eastward of it, part of which is visible above water, and other islands and rocks front the S. part of Solor. At a small distance inside Hoog Island two other rocky islets form the passage, which are seen when the strait is open ; they bear W.S.W. and E.N.E. from *Southern entrance.*

each other, distant half a mile or more, having soundings of 40 and 30 fathoms mid-channel, but the common passage is on the E. side of these two islets.

The S.E. point of Flores, at the foot of the high volcano of Lobetobie, is of a green aspect, resembling a gunner's quoin, from which a reef projects with 9 fathoms near its edge. The peak of Ilimandri bears N.N.E. of the point.

After passing the islets, the fleet which passed through this strait in December 1797 carried soundings from 40 to 27 fathoms, decreasing regularly towards the shore; and in the evening, when 4 or 5 miles inside the islets, they hauled in for the Solor side of the strait, and anchored in from 15 to 35 fathoms.

The Glatton, in 28 fathoms, had the middle isle in the S. entrance of the strait, bearing S. b. W. $\frac{1}{2}$ W., volcano of Lobetobie W. $\frac{1}{2}$ S., and the high mountain of Larantuca N. $\frac{1}{2}$ E., observed lat. 8° 30′ S., and the tide setting regularly N. b. E. and S. b. W. about $2\frac{1}{2}$ knots. From this anchorage the fleet steered N.E. b. N. and N.E. $\frac{1}{2}$ N., in soundings from 25 to 40 fathoms, then no bottom until within three quarters of a mile of Adenara, where they had 26 fathoms, decreasing fast to 20 and 18 fathoms, and the Glatton anchored in 17 fathoms, Ilimandri peak bearing N.W. b. W., the northern entrance of the strait between N.E. b. N. and N. b.E. $\frac{1}{2}$E., S. point of Adenara S. b. W., and the N.W. point of Solor S.S.W. The ground was bad, mostly coral rock and coarse sand, but the tides were weak, though farther out they were found to set N.N.E. and S.S.W. upwards of 4 knots, and to rise 8 or 9 feet. The Glatton's boat found 8 fathoms water close in shore abreast of the ship, but the shoal spit projects from the point about three-quarters of a mile to the S.E., with only 2 fathoms on it at a cable's length off shore.

Larantuca. 464. At Larantuca village, where the Portuguese have a settlement, good water and refreshments for two or three vessels may be had. The anchorage in the bay of Larantuca, about 1 or $1\frac{1}{2}$ cables' lengths off shore, is considered more safe than nearer Adenara, but the bottom is the same. The Jane anchored, in 1702, in 16 fathoms, a cable's length off shore, and had 12 fathoms near the ship when she had veered half a cable, and moored with a cable on shore, the N.E. point of the bay bearing E.N.E. $\frac{1}{2}$ E., the entrance of Solor Strait S. b. E. $\frac{3}{4}$ E., and of Lobetobie Strait S.S.W. $\frac{3}{4}$ W.

H.N.M. sloop Siwa, in 1838, passed Larantuca at a cable's length distance, in 7, 9, 7, 5, 7, fathoms, and anchored in 6½ fathoms the same distance off shore, the extremes of Adenara bearing N.E. and S., and the village of Gegge (situate about half a mile to the northward of Larantuca) W.S.W. ½ W.

465. The narrows of Flores Strait are about 3 cables' lengths wide. The steamer Hecla carried soundings in 16 fathoms, mid-channel, 12 and 11 fathoms nearer to Adenara, 14 and 15 fathoms on the Flores side of the strait, and deepened suddenly to 19 fathoms, no bottom when to the northward of the narrows. *Flores Narrows.*

466. The flood sets to the northward and the ebb south. The tides change regularly every six hours. H.N.M. frigate Triton, December 1838, observed the ebb to run 2 or 2½ knots, but the flood 5, the latter to set in very irregularly, with violent ripplings, which make it dangerous to anchor in the entrance of the strait. It was high water at 12 o'clock two days before full moon. H.N.M. sloop Meermin, having passed through the strait of Solor, rounded the S.W. point of Adenara at a short distance in a strong eddy setting to the northward, and anchored near the narrows in 25 fathoms hard bottom, the flagstaff of Larantuca bearing N.W. b. W., an island to the southward of that place west, extremities of Adenara N.N.E. ¾ E. and S. b. W.; from hence she worked with a strong breeze at N.E. and a full flood tide through the narrows, which she passed in eight tacks, but the ripplings were so violent in the middle of the strait that the ship turned twice round notwithstanding the strong wind. It is therefore advisable to anchor near the narrows, and not to pass it without a leading wind. The Triton entering the strait from the northward, in December 1838, was carried by a strong eddy close in to Adenara, and was thought to have struck the ground about 1½ cables' lengths off shore, the rocks being visible over the stern when in soundings of 4½ fathoms; tacked immediately, and came to in 16 fathoms, as she could not stem the flood. Ilimandri peak then bore W. b. S. and Serbette N. ½ W. When weighing at noon, after the tide had changed, and it blowing from W.N.W. with strong gusts of wind from the high mountain of Larantuca, proas were seen in the narrows, carrying a southerly wind, and as soon as she reached the narrows the wind veered to that quarter, but the ebb ran with so much rapidity that she was hardly governable, but she cleared the strait of Lobetobie the same day at 8 P.M. *Tides.*

Ships from the southward, when leaving the narrows, should haul in for Adenara, because the tide, setting strong round the Point of Flores, will be liable to drift them on the reef which projects from this point, or to horse them into the Bight of Flores outside the point, which is shoal all over.

Adenara Anchorage. Ships coming from the northward may anchor off the village of Adenara, either to get out the boats and take every precaution requisite before they proceed into the strait, or to procure refreshments. When Serbette bears N.W. b. W., and Komba N.E. $\frac{1}{2}$ E., Adenara village bears S.E. b. S.

Serbette Island. 467. Serbette Island, situated in the northern entrance of the strait, in 8° 8′ 30″ S. and 123° 1′ E., * bearing S.E. b. E. $\frac{1}{4}$ E. from Flores Head, and N. b. E. $\frac{1}{2}$ E. from Ilimandri Peak, is a low island, uninhabited, and visible from the deck about 8 or 10 miles ; it is surrounded by an extensive reef, partly dry, from the eastern extremity of which Ilimandri Peak bears S.W. $\frac{1}{2}$ W., and Wokka Peak S.E. $\frac{1}{4}$ E. The reef extends about the same distance nearly 2 miles to the westward, and the channel inside between it and Flores is apparently clear.

Komba Island. 468. Komba Island is high, and stretches N. and S. about 3 miles. The peak on the southern part is in 7° 48′ S. and 123° 34′ E. † From the W. coast of this island Wokka Peak bears S.S.W. $\frac{1}{2}$ W., the N.W. peak of Lomblen S. $\frac{1}{2}$ W., and Lobetobie Peak S.E. $\frac{1}{2}$ E. ; and from its E. coast the two tops of the latter mountain bear S. b. E. $\frac{3}{4}$ E. and S.S.E., and the W. peak of Lomblen S. $\frac{3}{4}$ W. It is an excellent guide for ships coming from the Banda Sea and bound to the Strait of Flores,

					° ′ ″	° ′ ″
* H.N.M. frigate	Ajax	. .	1834,	made it in	. . .	123 0 0 E.
„ „	Triton	. .	1838,		8 8 30 S.	123 2 40 „
„ sloop	Koerrier	.	1843,		. .	123 1 52 „
„ steamer	Hecla	. .	1844,		8 9 30 „	. .
„ sloop	Arend	. .	1844,		8 6 30 „	123 0 12 „
† According to					° ′ ″	° ′ ″
H.N.M. frigate	Ajax	. .	1834,	in	7 48 0 S.	123 39 0 E.
„ „	Hippomenes		1838,	„	. . .	123 37 0 „
„ „	Maas	. .	1839,	„	. . .	123 37 40 „
„ sloop	Panter	. .	1839,	„	7 47 30 „	123 38 0 „
„ „	Meermin	.	1839,	„	7 48 0 „	123 34 0 „
„ frigate	Rotterdam		1840,	„	. . .	123 32 15 „
„ schooner	Janus	. .	1840,	„	. . .	123 35 40 „
„ steamer	Hecla	. .	1844,	„	7 47 24 „	123 37 20 „
„ schooner	Janus	. .	1844,	„	7 46 42 „	. .
„ „	Zephyr	.	1844,	„	7 47 12 „	. .

which bears S.W. ¼ W. It may be passed on either side within a short distance, but generally vessels should take the E. side in steering for the strait of Flores during the Eastern monsoon, because the currents are strong to the westward.

469. Capt. R. Mackie, of the ship Jessie, March 9, 1826, discovered a shoal which he places in 7° 29′ S.; for when it bore N. about 2 miles, Komba bore S.W. b. W. ¼ W., and the high land of Lomblen S. b. W. ¼ W. This shoal is even with the water's edge, and stretches E. and W. about a cable's length; no breakers were visible. *Jessie Shoal.*

470. Vessels bound to Timor, after passing through the strait of Flores, generally proceed through the strait of Solor, between the islands Solor and Adenara; it stretches about E. and W., and is 3 miles wide. There is no anchorage, except close in-shore, and the Solor side of the strait is preferable, as the squalls are not so frequent there, Solor being less elevated than Adenara. *Solor Strait.*

471. H.N.M. frigate Boreas anchored near the village of Lawang, in 23 fathoms coral, about 2 cables' lengths off shore, the ruins of the Dutch fort bearing S., extremes of Adenara W. b. N. and E. b. N., Ilimandri Peak N.W. ¼ N., and Wokka Peak N.E. b. E. ¾ E.; they had only 2 fathoms, about a cable's length closer in shore. It is necessary to moor with a cable on shore, as the bottom is very steep and foul, and ships are therefore liable to be driven into deep water, even with light airs from the land, which happened to the Boreas. She lay there in an eddy, for the flood was observed to come from the westward and the ebb from the eastward, the reverse direction of the tides in the middle of the strait; the rise of tide is 4 or 5 feet at neap tide. Good water may be had on the opposite shore, N. of Lawang. *Lawang.* *Tides.*

472. The village of Lamarkwera, near the N.E. end of Solor, is in 8° 26′ S. and 123° 10′ E. H.N.M. frigate Boreas anchored here May 1838, in 19 fathoms sand and coral, the W. point of Lomblen bearing S. b. E. ¾ E., N.W. peak of the same island N.E. b. E. ¾ E., Ilimandri Peak N.W. b. W. ¼ W., Wokka Peak N.E., N.E. point of Solor S.S.W., distant 1 mile, N. point of Solor W.N.W. ¼ W. The ebb sets to the northward and the flood to the southward; sea-breeze southerly, and land-breeze northerly and light. *Lamarkwera Road.*

H.N.M. steamer Hecla anchored here, May 1844, in 7 fathoms, the extreme points of Solor bearing S.b. E.$\frac{1}{2}$ E. and W.N.W. $\frac{1}{4}$W., the flood was observed to set to the westward and the ebb to the eastward. In approaching the anchorage, the lead ought to be kept going as the soundings decrease rapidly towards the village.

Lamarkwera Reef. H.N.M. frigate Maas got on a reef a little to the westward of Lamarkwera in 2$\frac{1}{2}$ fathoms, the N. and N.E. points of Solor bearing W. $\frac{1}{8}$ S. and S.S.E. $\frac{1}{8}$ E. There is a safe passage between the reef and Solor, in which the Maas sounded in 4$\frac{1}{2}$ and 5$\frac{3}{4}$ fathoms.

Capt. E. Plaat, D.R.N., examined this shoal which he found to bear W. b. N,. about 2$\frac{1}{2}$ cables' lengths from Lamarkwera, stretching N.E. and S.W., beginning near the north point of Solor, and extending to the middle of the strait ; the shoalest part is on the Solor side, in 2$\frac{3}{4}$ fathoms, and increases to 6 fathoms on the northern edge. There are channels on either side of the reef, and the Meermin passed between it and Solor, keeping the shore at a stone's cast distance, least soundings 2$\frac{3}{4}$ fathoms, deepening fast to 18 and 20 fathoms abreast the N. point of Solor.

The Hecla found no less than 5 fathoms, and the Boreas 6 fathoms the least water in this passage, keeping half a mile off-shore ; but in returning from Lawang she sounded in 3$\frac{1}{2}$ fathoms, with the rocks clearly visible under the ship's bottom, after she had rounded the N. point of Solor, which was about 4 cables' lengths distant at the time.

Bolling Strait. 473. Bolling Strait was much frequented by the Dutch Company's ships, and, according to their charts, there are soundings all through it, and anchorage in 20 to 9 and 6 fathoms in the bay of Lomblen. The northern entrance of the strait bears about S.S.W. $\frac{1}{4}$ W. from Komba Island. The natives say there exist several dangers in the strait.

Lomblen Island. 474. The S.W. point of Lomblen bears S. b. E. $\frac{3}{4}$ E. from the N.E. point of Solor. The S. and W. coasts of this island are high and bold, volcanic, and of a barren aspect. Soangie Island, easily known by a hole which opens when it bears N.W. $\frac{3}{4}$ W., is in 8° 35′ S. and 123° 12′ E., and bears S.S.E. from the S.W. point of Lomblen, and W.$\frac{3}{4}$ S. from Lamarap Peak ; it has a green aspect, and may be approached within a short distance.

475. In approaching the strait of Alloo, along the S. coast of Pantar, the seaman is struck with the appearance of four islands, but the easternmost proves to be the high S.W. part of Pantar, the second the W. part of the same island, joined to the body of the island, by a low land-tongue, though, according to Lieut. P. F. Uhlenbeck, D.R.N., it is detached ; the next is Klein Island, which may be called low in comparison to the surrounding land ; several rocks and reefs project from it, especially from the S. point, which is also fronted by several detached rocks at a considerable distance ; another reef projects a considerable way from the N. point in a N.N.E. direction. The forth is Middle Island, which has a reddish, rocky, and barren aspect. When Klein Island is in one with the W. part of Pantar, the opening of the strait will be discerned. *Alloo Strait.* *Islands and dangers in the Strait.*

The high S.W. foreland of Pantar has a reef running off in a southerly direction, on the outer edge of which lies a large rock with heavy breakers ; the passage between Klein Island and Pantar is thought to be very dangerous, and seems never to have been examined. A high rock is joined by a reef to the westward of Middle Island. The western isthmus of Pantar and Klein Island has nearly the same level aspect ; but the N.W. point of the isthmus may be known by a group of seven trees on it. The N.W. coast of Pantar stretches about N.E., forming several bays, and a reef runs off the N. point about half a mile, with many rocky points visible above water.

476. Groen Island is small, round, and high, consisting of reddish rock. It appears from the eastward like a sand-hill, but when viewed from the southward it has a green appearance. Vlak Island is very low, its N. side is covered with shrubs, but the southern part is barren. The Panter perceived only one low island, but the Hecla saw two, possibly united at low water. A reef with several ledges of rocks a little above water projects about N.E., 4 miles from Groen Island. The Hecla had the E. point of this reef bearing S.E. b. E. $\frac{1}{4}$ E., and its northern edge S. b. E. $\frac{3}{4}$ E. when Groen Island bore S.S.E. $\frac{1}{2}$ E., and the centre of Vlak Island S. $\frac{3}{4}$ W. The western edge of this reef runs along the W. coast of Vlak Island, and joins it to Groen Island. *Groen and Vlak Islands.*

477. The N.E. point of Lomblen is fronted by a reef with heavy breakers ; but a little to the southward of this point the *N.E. point of Lomblen.*

coast is clear as far as the next projecting point, which is also fronted by high rocks, and near which there are no soundings.

Middle Channel.

478. H.N.M. sloop Panter went through this strait to the northward, June 1839, passing between Middle and Klein Islands; the strong current in this passage rendered the ship ungovernable, although she ran 7 knots. At 1 P.M., when they had cleared the strait, a calm overtaking them and the tide changing, the ship was horsed close along the E. point of Lomblen, and within a short distance from the high rock which fronts the point to the W.S.W.-ward of the E. point of Lomblen, notwithstanding all the boats were towing the ship; they tried for sounding several times, but had no bottom with 100 fathoms line. After having been carried to and fro for some time, the ship was swept into a small bay to the westward, where she remained the sport of the currents till 10 P.M., when a southerly breeze sprang up, and extricated her from this most perilous position, by enabling her to clear the strait about midnight.

The Hecla and Arend, May 1844, after having stopped abreast of Pindie, a village on the N. coast of Pantar, to inquire after the pirates, passed through the channel inside of Groen and Vlak Islands, and proceeded between Middle Island and Lomblen.

Lobetolle Peak.

479. The strait of Alloo may be easily known, as well from the N. as from the S.-ward, by the high double peak Lobetolle, near the N.E. point of Lomblen, in 8° 12′ S. and 123° 45′ E.,* bearing N.N.W. ¼ W. from the middle channel. Groen Island is also a good guide in coming from the northward, and Lomblen and Pantar being both very high land, the strait will be easily discerned.

It is not advisable to attempt this passage, when bound to the southward during the eastern monsoon, as it would be difficult to get through in one tide, the winds then generally blowing strong from S. to S.S.W.

Great care is requisite when sailing along the entrance of Alloo Strait, not to approach Lomblen within 4 leagues distance, as ships are liable to be horsed in the strait by the current, as happened with the frigate Maas, in 1839. In general great attention is to be paid to the currents when passing near any of the eastern straits, as ships often have been carried into

* H.N.M. frigate Hippomenes, 1838, made this peak in 123° 45′ E.

them. The Panter observed high water between 9 and 10 A.M., two days before full moon.

480. The strait of Pantar is formed between the island of that name and the W. side of Ombay. The N.W. end of Ombay is high bold land, and the distance from it to the N.E. point of Pantar is about 5 miles; but in the northern part of the strait there are three islands. The northernmost of these, called North Island, in about 8° 8′ 40″ S. and 124° 18′ E., is low, and on the middle of it there is a small hummock. Another island, in the form of a cone, bears S. ½ W. from the former, and the third, called Hoog, is much larger, and terminates in a double peak, nearly as high as the N.W. end of Ombay or the peak of Pantar; and the land abreast of it forms a bay on both sides the strait. There is a deep inlet to the N.E., and a Malay village near the beach in the back part of this bay. South Island, situated in the southern entrance of the strait, in about 8° 29′ S. and 124° 15′ E., is high. The proper channel through is between the islands in the N. part of the strait and the Ombay shore, and out to the southward on either side of South Island; but the passage W. of the latter is preferable. The narrowest part of the channel is between the N.E. point of Hoog Island and the N. point of the inlet that stretches into Ombay, and is 2 or 3 miles wide. Capt. J. Wales went through the strait in 1798; he passed close to the N.W. point of Ombay and its reefs, and carried a fair wind until abreast of Hoog Island; then succeeded light baffling airs from the southward, with which he worked through between Ombay and Hoog: when 3 or 4 miles to the southward of the latter, the S.E. wind set in steadily, with which he steered out S.S.W.-ward between South Island and the Pantar shore. No ground was reached with 40 fathoms of line in passing through the strait, and strong eddies were experienced off the S.E. part of Hoog Island. *Pantar Strait.*

A high mountain, forming a saddle, stands on the southern part of Pantar; its southern peak is in 8° 32′ S. and 124° 6′ E.*

					° ′	° ′ ″	
* H.N.M.	frigate	Boreas,	1838,	made this peak in	8 30 S.,	124 6 0	E. (S. top.)
„	sloop	Panter,	1839,	„ „	„ „	124 8 30	„ (E. „)
„	steamer	Merapie,	1845,	„ „	„ „	124 4 15	„ (S. „)

CHAPTER IX.

Timor and adjacent Islands and Channels.

Ombay Passage.

481. The most eligible route for ships late in the season bound to China is by the Ombay passage, to proceed to the westward of Boeroe, then through Pitt and Dampier, or the Gilolo Passage. After making the E. point of Sandelhout, pass between Timor and Ombay, and haul close round the E. point of the latter island to the northward.

Ombay Island.

482. Ombay, or Allor, extends nearly E. and W., about 19 leagues ; it is all high, but most so at the eastern part, and is covered with beautiful high trees to the summit of the highest ridges of mountains. It is well inhabited, but the natives are very ferocious, and it is said that they are cannibals. This island appears to be all round bold and safe to approach. H.N.M. sloop Meermin approached the S. coast in several parts within 2 cables' lengths distance. The S.E. point is formed by a bluff white rock in 8° 21′ S. and 125° 14 E.*

Wetter Island.

483. Wetter is also high and bold, extending E.N.E. and W.S.W. about 19 leagues. Honden Island, off the N.W. point of Wetter, is in 7° 41′ S. and 126° 1′ E., and Liban, or Babi, is another high island, separated by a channel of about 2 miles broad from the S.W. end of Wetter. The W. coast of Wetter is faced by reefs, and the channel inside Babi is said to be unsafe.

Nautilus Reef.

H.N.M. sloop Nautilus, standing off shore from Wetter, in May, 1839, at 10 P.M., discovered a reef, partly dry, extending S. b. W. and N. b. E., about 3 miles, and a mile broad, distant

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* H.F.M.S. . Coquille and Uranie, 1823, made it in 8° 21′ 20″ S., 125° 12′ 50″ E.
H.N.M. frigate Hippomenes . . 1838, „ . . 125 12 0 „
„ sloop Koerrier . . . 1843, „ . . 125 14 36 „
„ steamer Phœnix . . . 1843, „ . . 125 15 24 „
„ „ Hecla . . . 1844, „ . . 125 15 0 „
„ „ Merapie . . . . 1845, „ 8 21 24 S., 125 13 30 „

8 miles from Wetter, and separated from Babi Island by a channel 2 or 3 miles wide. The sloop anchored immediately that the danger was discovered, with all sails standing, in 20 fathoms sand, and had only 7 fathoms after she had paid out 40 fathoms of her chain, the rocks being then only a few yards from the stern. At day-break she was found to lie in a bight of the reef, the extreme points of which bore N.N.E. and S. b. E., at equal distances, Babi Island bearing S.S.W. $\frac{1}{2}$ W. and S. $\frac{3}{4}$ E., S.W. point of Wetter S.S.E. $\frac{1}{4}$ E., Honden Island, N.E. b. N., latitude observed 7° 50′ S. The reef consists of sand and small rocks, with some dry coral patches, and there are soundings of 20 fathoms, 1 or 2 cables' lengths to the eastward of it, regularly decreasing towards the shoal, over a bottom of fine white sand.

The E. point of Wetter is in about 7° 40′ S. and 126° 45′ E.; it is not advisable to approach this island closer than 4 miles, as H.N.M. schooner Janus, 1840, saw breakers near the S.E. part, about 2 miles from the shore.

Anchorage near Kampong Sauw.

H.N.M. sloop Dourga anchored abreast of the village Sauw, which is near the middle of the S. coast, in 50 fathoms, and found it sheltered from south-easterly winds, by a projecting point of land.

Kambing.

484. Kambing Island extends N.N.E. and S.S.W. about 8 miles, from its N.W. point the peak of Babi bears N.E. $\frac{1}{4}$ N. In 1844 Lieut. Hooft's squadron approached the W. side of this island, within 4 cables' lengths abreast a village situated in the mountains; the boats got no bottom at 65 fathoms, about 2 ships' lengths off shore, and had 9 fathoms rocky bottom almost at the beach. The boats were at first received in a hostile manner, and the natives rolled large stones from the tops of the hills in order to impede the ascent along a steep path, but afterwards the commanding officer succeeded in establishing an intercourse with them. Their language was unintelligible to the interpreters, and there was only a single person who spoke a few Malay words, from whom it was understood that the pirates often carry away numbers of the inhabitants, and spoil their plantations, and that the natives of this island do not carry on any trade, but restrain themselves to fishing and to the cultivation of palm trees and jagon. They appear to be but little civilized, and they had no fire arms nor

ornaments which might reveal any former intercourse with Europeans. In some parts of the W. coast there are narrow beaches about 150 paces broad, but the land then ascends like a steep wall; wherever the ground permits cultivation, palm-trees and fields of jagon are seen.

H.N.M. steamer Hecla, with the other ships in tow, coasted within a short distance along the N. and E. sides of this island, without finding anchorage. The shore was found to be steep-to on all sides, except near the N.E. point, from which a reef projects about 2 miles. The N. and E. coasts appear to be still more inhospitable than the W. coast, and do not offer even a landing place; no villages are seen there, and no other boats but very small *lippas*.

The channel betwixt Kambing and Babi is 5 or 6 miles wide, and that between Kambing and Ombay about 5 leagues; both are safe, but subject to strong currents.

Kisser Island. 485. The centre of Kisser Island is in 8° 6′ S. and 127° 7′ E. The Dutch fort Vollenhoven, on the W. side of this island, was evacuated long since, but is kept in good condition by the inhabitants, who are Christians. The Dourga anchored on a bank of little extent along the shore, a little to the northward of the bold S.W. point. Near the edge of the reef there is no bottom with 80 fathoms, and the soundings on it are very irregular, 5 and 10 fathoms with overfalls of 30 fathoms.

Roma. 486. The W. point of Roma or Teralta bears E. about 11 leagues from the E. point of Wetter, and in 7°40′S. and 127°19′ E. The Dourga anchored in 7 fathoms on a sandbank, which projects half a mile to the northward of Medta Island, which is very small and bears S. 3 leagues from the W. point of Roma, and about 3 miles from Kampong Dierocsoe on Roma. During the north-western monsoon ships may anchor in the bight to the northward of that village, to leeward of the W. point. It is necessary to moor the ship with a cable on the shore here as well as at Kisser, to prevent her being driven to sea when the land breeze blows hard.

Timor, N.E. Point. Lieut. Labiche and Bérard, French R.N., made the N.E. point of Timor in 8° 20′ 15″ S., and 127° 10′ E. From thence the coast stretches about W. till near Parimballa Point. The Portuguese have several small settlements on this part of Timor, of which

487. Dielli is the principal port, where the ships proceeding through the Ombay passage sometimes stop for supplies. It is also much frequented by whalers, and has a considerable trade in wax and sandalwood. The flagstaff is in 8° 34′ S. and 125° 37′ E.* From the low situation of the town under the high land, it is with difficulty perceived when coming from the northward, but to the eastward of it there is a bluff projecting point by which it may be known, and the houses and the flagstaff will be visible when about 4 miles distant from the Timor shore, with the peak of Kambing bearing N. ½ E. Large ships, which only stop for refreshments, should anchor at a fit distance outside of the reefs which form the inner harbour, in 30 or 40 fathoms, as the channel between the reefs is very narrow, and there is little space inside of them. *Dielli.*

The inner harbour is formed by the reefs running off the bay points and another detached reef betwixt them, which are mostly dry at low water, and consist of sand and coral. The western entrance is the widest and most used, but it is difficult to run out through this channel when there is no land breeze. *Inner Harbour.*

To enter the harbour of Dielli from the westward, pass mid-channel between the reef which runs off the W. point of the bay and the middle reef, in soundings from 10 to 6 and 14 fathoms. The instant a ship hauls round the reef near the W. point of the bay, sail should be reduced. Steer for the custom-house which is a large building standing near the beach, to the westward of a high tree, and keep it in one with the gate of the church, which will lead you close to a coral patch, on which a bamboo has been planted in 10 or 11 feet. When inside of this patch, haul in for the W. part of the harbour, and come to in 9 fathoms, at equal distance from the custom-house, and the bridge to the westward, and abreast of a *Western Channel.*

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* According to

		°	′	″		′	″	
Horsburgh's India Directory .	in	8	35	30	S.,	125	40	0 E.
The Princess Charlotte, 1802 .	„	8	34	30	„	125	36	0 „
H.F.M.S. Uranie & Coquille, 1823	„	8	32	54	„	125	37	24 „
Lieut. Brennwaldt, D.R.N.	„	8	34	30	„	125	38	0 „
H.B.M. brig Britomart . .	„		.	.		125	36	10 „
H.N.M. schooner Janus, 1840	„		.	.		125	36	0 „

white house. The shore is here steeper and softer than near the custom-house, where there are two coral patches, with 3 and 6 feet water over them. Between the reefs the bottom is hard, but inside mud.

Eastern Channel. The eastern channel is only half a cable's length wide, but it has a leading wind during the western monsoon, both for ships entering or going out. To enter it, keep the high tree in one with the house standing between the church and the custom-house. There are soundings from 20 to 7 fathoms in this channel. Haul close round the point of the reef, to avoid the patches abreast of the custom-house, and anchor abreast of the white house, to the westward of the custom-house. Another good anchorage is in 15 fathoms, with the flagstaff of the fort bearing S.E. $\frac{1}{4}$ E., the church S.E. $\frac{1}{2}$ S., the battery near the inner point W. $\frac{1}{8}$ S., and the S. point of Kambing Island N.b.W.$\frac{1}{2}$W. It is high water at full and change of moon at 1 hour 30 min., and the rise of the tide is 6 feet at the springs. Cattle and vegetables may be had here, but rice and poultry are neither cheap nor abundant.

Mantotte. 488. Mantotte, to the eastward of Dielli, is an open roadstead, but there is a snug cove a few miles farther to the eastward, sheltered by reefs from all winds, and good anchorage in 8 or 9 fathoms.

Abreast the S.E. point of Ombay is the narrowest part of the strait of Malloca, or the Ombay passage, which is there 5 leagues wide.

Gedeh. 489. Gedeh is a Portuguese settlement in 8° 57′ S. and 124° 55′ E., as observed on board H.N.M. frigate Boreas in 1838. It lies in a valley surrounded by picturesque mountains, and is frequented by whalers. It is fronted by a rock, which bears N.N.E. from the flagstaff, and with soundings near it. The Boreas, coming from the westward, had no soundings till within 4 miles of the road, then 65, 55, and 50 fathoms, decreasing to 35 fathoms, a cable's length off shore; being becalmed, she was towed round the W. point of the bay, and steered for the rock in soundings of 42, 30, 45 to 26 fathoms, brownish sand, where she came to, the flagstaff bearing S.S.E. $\frac{1}{4}$ E., distant 2 cables' lengths, the rock N.E. $\frac{1}{4}$ N., N.E. point of the road N.N.E. $\frac{1}{2}$ E., and Pantar Peak N.W. b. W.$\frac{1}{2}$W. It is very tedious work to water here, on account of the great

surf on the beach. The best landing place is abreast of the fort, where the boats come to their grapnel. The tides in this road, and farther to the westward close in shore, change, but are very weak.

490. Atapopa is a Dutch settlement, which cannot be seen at more than 2 miles distance, as the land rises immediately behind it. The land thereabout is remarkably rugged, in some parts rocky and barren, but generally wooded. The Boreas anchored abreast of this place in 55 fathoms, coarse brown sand mixed with stones, the flagstaff bearing S $\frac{1}{4}$ W. distant a mile, houses of Gedeh E.N.E. $\frac{1}{2}$ E., Pantar Peak N.W. b. W $\frac{1}{4}$ W. The boat sounded in 17, 10, and 6 fathoms, rocky bottom, a cable's length inside the anchorage, on the reef which lines the shore near Atapopa, and stretches to near Gedeh. *Atapopa.*

491. Liefouw, a Portuguese settlement, in 9° 12′ S., and 124° 24′ E., or 24′ E. of Goela Island, according to the observations of D'Entrecasteaux, has an open roadstead, which is separated from Tolanican Bay by a low point. There is anchorage near the village of Koesie in 22 fathoms, 2 cables' lengths off shore, the houses bearing about S., Liefouw Point E.N.E., 2 miles distant, and Goela west. The Prince Regent, in 1816, sent her boats to Koesie, and they brought off 18 buffaloes and some water. There is anchorage to the westward of the village, but in 50 fathoms, about 2 miles off shore, and in 25 fathoms, one mile from it, blueish clay. *Liefouw.*

492. A vessel might anchor near Sotrana in 30 to 40 fathoms, foul and rocky ground, about $1\frac{1}{2}$ cables' lengths off shore, with the houses bearing S. b. W., Goela Island N.W, westerly, extremities of the land N.E. b. E. and W. $\frac{1}{2}$ S. *Sotrana.*

493. Goela is a small island of middling height in 9° 15′ S. and 124° 1′ E.*, distant 6 or 8 miles from Timor, and bearing N. b. W. from Timoe Peak, which is in 9° 33′ S. *Goela Island.*

494. Menango, a sandbank or rock which appears only in old Dutch charts, was lately seen by Capt. C. Hart, who describes *Menango shoal.*

*		D'Entrecasteaux	.	1792,	made it in	9	15	0	S., and	124	58	55 E.
H.F.M. ships	.	Coquille and Uranie,		1823,	„	9	14	30	„ „	123	59	30 „
H.N.M. frigate	.	Boreas	. . . . .	1838,	„	9	15	30	„ „	124	0	40 „
„	„	Hippomenes	. . .	1838,	„	9	15	30	„ „	124	2	0 „
„	„	Mass	. . . . .	1839,	„		. .			123	59	50 „
„ sloop	.	Meermin	. . . .	1839,	„	9	15	0	„		. .	
„ schooner		Egmond	. . . .	1844,	„	9	17	0	„		. .	
„ steamer		Meraple	. . . .	1845,	„		. .			124	2	19 „

it as a small patch a little above water or even with the water's edge, situated at equal distances from Timor and Goela.

Currents in the Ombay Passage.

495. The currents are strong, with great ripplings, in the Ombay passage, generally setting to the N.E. during the western monsoon, and during the opposite monsoon to the S.W.-ward; but in some places close in-shore a kind of weak tide has been experienced. Near the entrance of the straits of Alloo and Pantar the current takes a northerly direction during the eastern monsoon, but during the western monsoon it sets out S.S.W. The strong current in the Ombay passage seems to cause a strong easterly current along the N. coast of Ombay during the eastern monsoon.

The Panter in June 1839, found to the northward of Ombay a set to the S.E. b. E. of 46 miles in 24 hours, the wind blowing from that quarter, which produced a very disagreeable sea. When in the Ombay passage the current was observed to run about W.S.W., and while coming from Kambing to Goela the same ship was set by the current W.S.W. 20 leagues in 20 hours.

The Meermin, in September 1839, observed a current setting E.S.E. 32 miles in 24 hours along the N. coast of Ombay, and the next day in the Ombay passage she was set 26 miles to the S.W. b. W. in 24 hours.

The Arend, in May 1844, found, on the N. coast of Ombay, a N.E. b. easterly current of 18 miles in 24 hours, and the next 24 hours she experienced in the Ombay passage a south-westerly set of 30 miles.

The same cause seems to produce a strong westerly current along the N, coast of Wetter. The Zwaluw, working to Amboina, in August 1844, observed an easterly current between Flores Head and Komba Island, which diminished in strength to the eastward of that island, and abreast the entrance of the Ombay passage; and she met with a strong westerly current along the N. coast of Wetter.

In June the S.W. or westerly currents in the Ombay passage seem to have attained their greatest strength. It has been mentioned already that the Panter found a south-westerly current there of 3 knots. The schooner Circe, in June 1847, experienced a westerly current of about the same velocity; and during her passage from Amboina to Goela Island, she

was set in four days to the westward 190 miles, and in the Ombay passage she had a westerly current of 82 miles in 24 hours.

Near the end of the eastern monsoon (in August and September) strong easterly currents take place in this passage, though in October they often run with great velocity to the south-westward.

In October 1813, the Albion could not get to the eastward on account of the westerly current, and she was obliged to pass through the strait of Flores. The Meermin, from Koepang, bound to Amboina, was beating in the Ombay passage from October 10th to 30th in 1839, against S.W. and W.S-westerly currents, varying in velocity from 24 to 48 miles in 24 hours. This ship reached several times the E. point of Ombay by working within 1 or 2 miles of the S. coast of that island, where an eddy was experienced; but the south-westerly current swept her into the middle of the strait whenever she tried to round the E. point, and there she lost ground rapidly. Strong currents out of the straits of Pantar and Alloo, and frequent calms, prevented her going through them, and she was at last obliged to return to Copang to fill up her water and to proceed through the strait of Flores.

Ships from Java or Macassar, bound to Amboina, during the eastern monsoon work along the N. coasts of Sombawa, Flores, &c., till they have reached the N.W. or N. point of Wetter; or further to the eastward, if bound to Banda; and the voyage is often much accelerated by favourable currents.

Currents on the north coast of the Islands.

496. H.N.M. sloop Koerrier from Sourabaya bound to Copang through the strait of Flores, in March and April 1843, got an easterly current when to the northward of Lombok, which grew in strength as she advanced to the eastward.

The Panter, working along the N. coast of the islands towards the Ombay passage, June 1839, got easterly currents abreast of Lombok, and observed a daily set to the eastward of 12 miles till she had reached Ombay, and when on the N. coast of that island she was set 46 miles to the E.S.E. in 24 hours.

The Meermin, from Sourabaya, bound to Amboina, between the 1st and 25th of August 1841, found alternating currents; the sum of which during the passage was, to the southward, 1° 21′; to the northward, 1° 4′; to the eastward, 1° 27′; to the westward, 1° 5′.

The Zwaluw worked to Amboina, in August 1844, assisted by N.E. and easterly currents of 12, 20, and 28 miles per 24 hours from Lombok to Komba.

The Maas, in September 1839, had a daily set to the eastward of 10 to 30 miles along the N. coasts of the islands to the eastward of Java.

The Meermin, in September 1841, found a daily set to the eastward of 12, 20, and 36 miles, while working along these islands; this current was first observed to the northward of Lombok, and she remained in it till abreast the E. point of Ombay.

Brandend Island.

497. Ships crossing over between Wetter and Amboina generally run in sight of Brandend Island to secure the passage along the Lousapara and Schildpads Islands.

Brandend Island, in 6° 37′ S. and 126° 40′ E.,* is a high conical mountain visible 15 or 16 leagues. It is in a state of ignition, with smoke generally issuing from the crater at the summit, and is bold to approach.

From Amboina in the Eastern monsoon.

498. Leaving Amboina in the eastern monsoon (April to September) steer for Brandend Island, give a wide berth to the Lousapara Islands, on account of which it is preferable to pass to the westward of them, as the current generally sets strong to the westward during this monsoon. From thence, if bound to Europe, steer to make Honden Island, and proceed through the Ombay passage and the channel to the eastward or westward of Savou. Being so far to the southward as Rotti or Savou, the S.E. winds will begin gradually to increase in strength.

If bound to Java, the passage through the Strait of Salayer would be preferable; but when the route along the islands to the eastward of Java is to be taken, steer for Komba Island, and proceed to the westward along the N. coast of Flores, towards the strait of Madura; or when on the meridian of Allas Strait, cross over so as to pass between Urk and Kangeang,

* According to

Horsburgh's India Directory	- -	in	6	35	0	S., and	126	40	0	E.
H.N.M. frigate Zaan	- -	1837,	„	6	39	0	„	„	126	36	0	„
„ „ Hippomenes	-	1838,	„	6	38	0	„	„	126	41	0	„
„ sloop Meermin	- -	1841,	„	.	.	.	„	„	126	35	40	„
„ frigate Rotterdam	-	1842,	„	6	35	30	„	„	126	40	50	„
„ sloop Koerier	- -	1843,	„	.	.	.	„	„	126	41	30	„

or between the former and Takat shoals, and proceed along the N. coast of Madura, directions for which passages having been given in the former chapters.

The general passage for ships bound from Java to Amboina during the western monsoon is along the island Solombo and through the Strait of Salayer.

499. Ships leaving Amboina for Europe or Java during the western monsoon generally proceed by the northern route, *i.e.*, to the northward of Celebes and Borneo, or in the latter part of the monsoon through the strait of Macassar. Should Amboina be left in March, the southern passage may be adopted, *i.e.*, to work along the N. coast of the islands to the eastward of Java, as there generally the winds begin to shift and the currents to diminish in strength. It is advisable to stand up toward Boeroe, and from thence to work over near St. Matthew Islands. Having approached these and Veldhoen Island, a southerly or S.S.W. course ought to be followed in crossing over to the islands to the eastward of Java. If bound to Europe, pass through the strait of Alloo; and when clear of it, proceed through the channel between Sandelhout and Savou, or between the latter and Rotti, into the open sea. *From Amboina in the western monsoon.*

Leaving Amboina in the strength of the western monsoon bound to the westward, and having occasion to take the southerly passage, though it may not be possible to weather the strait of Alloo, nor probably the Ombay passage; yet a ship ought to use every means to pass on the N. side of Timor, for if she fall to leeward, and be obliged to round the E. end of that island, she will find great difficulty in beating to the westward between it and the coast of New Holland, where strong winds from W.N.W. to W.S.W., with squally weather and a heavy sea, usually prevail from November to April. If a ship should unavoidably fall to leeward, work to the westward along the S. coast of Timor and afterwards pass between it and Rotti; for by keeping to the northward of the Sahul Bank, near the land, a ship will probably have the wind and sea more moderate than in the offing, and she will not be embarrassed with the many dangers to the southward.

500. The S. coast of Timor, although little frequented, is safe to approach within a moderate distance. In coasting along this side of the island during the night, keep at a moderate *South coast of Timor.*

distance from the points of land, as several of them have projecting reefs. This coast stretches about N.E. b. E. and S.W. b.W.; the land is low near the coast, but gentle hills rise a little inland and a chain of high mountains is in the interior, which may be seen 27 leagues. The land is mostly covered with trees, except in some parts, which appear cultivated. Ships in sailing along this coast have found many small inlets that were safe to approach, and soundings of 15 to 25 fathoms within $1\frac{1}{2}$ miles of the shore.

Nessing Island. 501. Nessing or Jackee Island, in about 8° 25′ S. and 127° 16′ E., fronts the E. point of Timor. It is low and flat, appearing as a landtongue, before it opens with Timor. There is anchorage between it and Timor, but the currents set with great velocity through the channel.

502. H.B.M. ship North Star saw six remarkable white cliffs of different dimensions in 124° 17′ E., probably Batoe Poetie, which H.F.M. sloop Casuarini, Commander L. Freycinet, made in 124° 15′ 30″ E.

S. W. point of Timor. 503. The S.W. extremity, Oysina point, in 10° 23′ S. and 123° 30′ E., has a reef projecting to the south-westward, with heavy breakers and soundings in 12, 15, and 18 fathoms near its edge.

Semao Strait 504. The strait of Semao formed by that island and the S.W. port of Timor, stretches N. b. E. about 5 leagues. Semao is of middling height, and has about the same appearance as the land of Timor which fronts it, but is less elevated. The strait is free from dangers, with soundings of 30 to 60 and 70 fathoms in mid-channel.

Koepang Bay. 505. Koepang Bay, on the W. side of Timor, is very extensive, and the town of Koepang, built on its S. side, is the chief settlement on Timor belonging to the Dutch. The flagstaff of Fort Concordia at Koepang is in 10° 10′ S. and 123° 35′ E.*

*		Flinders -	1803,	made it in	10	9	0	S.,	123	35	45	E.
H.N.M. frigate		Boreas - -	1838,	„	10	10	15	„	123	35	0	„
„	„	Hippomenes	1838,	„		- -			123	35	0	„
„	„	Maas - -	1839,	„	10	10	0	„	123	37	37	„
„	sloop	Panter - -	1839,	„	10	10	15	„	123	35	30	„
„	„	Meermin -	1839,	„		. .			123	35	30	„
Capt. Owen Stanley, B.R N.		. .		„		. .			123	35	40	„
H.B.M.	brig	Britomart - . .		„		. .			123	34	22	„
H.N.M. frigate		Bellona -	1840,	„		. .			123	38	30	„

The N. point of the bay is low and may be known by a tree, which stands separate from the others and is visible long before the low point can be discerned. Tikoes is a small, round, wooded isle, situated on the edge of the reef which lines the N. point of the bay, and when the point bears E.S.E. $\frac{1}{2}$ E., it is seen just touching the islet. Kera is a low sandy isle in the middle of the entrance of the bay, surrounded by an extensive reef, on either side of which there are clear channels. When this island bears S.S.E. 1 mile, and Tikoes E.N.E. 3 or 4 miles, soundings will be got in 60 fathoms, sand and coral, decreasing to 50 and 38 fathoms about half a mile from Kera ; come no nearer to it on account of its surrounding reef, which projects much farther from the W. and S.E. sides ; it is partly dry at low water, which is always discoloured.

Selamo peak, in 9° 57′ S. and 123° 41′ E., has a remarkably rugged appearance, and may be seen long before Semao and Rotti are discerned in coming from the westward.

506. H.N.M. frigate Boreas entering the bay of Koepang in March 1838, Kera Island came in sight from the deck, when it bore S.S.E. distant 6 miles, at the same time the N. point of the bay, just touching Tikoes, bore E.S.E. $\frac{1}{2}$ E. From thence she steered S.E. till Kera bore S.W., and the flagstaff of Fort Concordia S. ; the reefs off Kera and off the N. point of the bay being clearly visible by the discoloured water on them. As it was blowing strong from W.N.W., she stood in E. and E.N.E., passed Tikoes at the distance of $2\frac{1}{2}$ or 3 cables lengths in soundings of 32, 30, 25, 22, 18, and 16 fathoms, bluish clay, and came to an anchor in the latter depth, Koepang bearing S.W. $\frac{1}{2}$ W., Tikoes W. $\frac{1}{4}$ N., and Boerong N. b. W. $\frac{1}{4}$ W.

The reefs between Tikoes and Boerong, and those which project to the south-eastward of the latter isle, are partly dry at low tide, and they are steep-to from 10 or 8 fathoms to 2 or $1\frac{1}{2}$ fathoms. To avoid the first, these islands ought not to be brought in opposite bearings.

						°	′	″		°	′	″
Capt. Wickhardt	-	-	-	made it in		10	12	0	S.,	123	35	43 E.
H.N.M. sloop	Arend	-	1844,	„		10	10	40	„	123	34	37 „
„ schooner	Zephyr	-	1844,	„		10	10	0	„	.	.	
„ „	Egmond	-	1844,	„		10	10	0	„	.		
„ „	Pylades	-	1845,	„		.	.			123	34	45 „
„ steamer	Merapie	-	1845,	„		10	8	0	„	123	36	30 „

Watering. 507. Good water may be easily got to the N.N.W.-ward of Boerong, where boats can approach close to the beach; there is also a small river near the village of Selamo, but boats cannot approach unless at high water.

Koepang Anchorage. 508. The Boreas, in running over the anchorage under Fort Concordia, had regular soundings from 16 to 32 fathoms, soft bottom, when 2 miles distant from Koepang; and from thence decreasing fast to 24 fathoms, bluish clay, where she anchored with the flagstaff bearing S. $\frac{3}{8}$ W., N. point of Semao W.N.W. $\frac{1}{2}$ W., Kera N. b. W. $\frac{3}{4}$ W., and Tikoes N.N.E. Ships ought not to go nearer in than 16 fathoms, as it shoals rapidly from 9 to 2 fathoms. When it is blowing weather from N.W., ships are often obliged to leave this anchorage and to search for shelter near Boerong or under Semao; but the latter anchorage is foul, rocky, and steep, and as the currents set with great strength through the strait of Semao, ships are liable to be driven into deep water if the anchor should drag.

Watering. 509. It is very easy to water here during the eastern monsoon, near the projecting point on which the Chinese church is standing, as the water is led thither through iron pipes. Ships may procure here cattle, poultry, and fruits.

510. The channel to the southward of the island of Kera, is also safe, and the reefs which surround that island are easily perceived by the colour of the water; they project about $1\frac{1}{2}$ miles to the westward, and the sea generally breaks heavily on the northern edge. The northern passage is, however, preferable, there being soundings in it from 40 to 25 fathoms, which will enable ships to anchor when overtaken by a calm. In the southern passage the first soundings are got about 3 miles from Koepang.

Tides. 511. The tides in the bay are weak; it is high water at full and change of the moon about 11 o'clock, the rise at the springs is 9 feet, and at neap tides only 4 or $4\frac{1}{2}$ feet; the flood comes in from the westward. Variation in 1803, according to Flinders, 0° 37′ E.; in 1838, according to Lieut. W. T. Baars, D.R.N., 0° 56′ E.; in 1839, according to Capt. Owen Stanley, B.R.N., 1° 53′ E.

Rotti. 512. The strait of Rotti lies between Lando and Timor. Rotti is of middling height, visible 12 to 14 leagues distance; it is fronted by several islands, and has many fine bays and inlets.

513. The islands of Lando and Rotti form two safe roadsteads; the entrance to Rango is from the eastward, and is difficult to go out during the eastern monsoon. The entrance to Karbaffo Bay is from the westward, rounding the reef which projects from the S.W. point of Lando; ships lie there quite land-locked. *Rango and Karbaffo Bays.*

514. H.N.M. schooner Circe anchored, in 1846, in the road of Baâ on the N. coast of Rotti in 15 fathoms with Tormana rocks bearing N.E. $\frac{1}{2}$ E., the flagstaff S.E. $\frac{1}{2}$ S., and the extreme W. point of the land seen between two islets W.$\frac{3}{4}$ S., in 10° 44′ 42″ S., and 123° 1′ 40″ E. *Baâ Road.*

515. The English ship Abercrombie bound to China, after being dismasted to the southward of Sandelhout, anchored in Boykaai Bay on the S. coast of Rotti, January 1812, in 21 fathoms soft bottom, 3 cables' lengths off shore, and procured there water and refreshments. The Abercrombie places this bay in 10° 46′ S. and 123° 10′ E. This is perhaps the same bay which was visited by Capt. R. Spratley of the Cyrus whaler, which is formed by the islands La and Mano fronting the coast, and inside of which there is safe anchorage in 10° 53′ S. and 123° 5′ 15″ E. It is high water in Cyrus harbour at full and change of the moon at 12 o'clock, and the tide rises 5 or 6 feet. *Boykaai Bay.* *Cyrus Harbour.*

516. There exist several shoal patches and probably dangers off the E. point of Rotti, but they are very imperfectly known. Captain Grimes, of the Ann from Port Jackson, bound to Timor, 1827, struck soundings in 5 fathoms on a reef, with the S.W. point of Timor hearing N.W. b. N. and a round hill on Rotti, W. $\frac{1}{4}$ N. *Dangers to the eastward of Rotti.*

H.B.M. ship Satellite, September 16, 1828, came suddenly upon a bed of rocks on which she had 5$\frac{1}{4}$ fathoms, with the rocks plainly visible under the bottom. She immediately hauled up N., then had 6$\frac{1}{2}$ fathoms, and at a cable's length farther to the northward, no ground with 60 fathoms. These rocks are about 4 miles from the nearest part of the island off the N.E. point of Rotti, a hummock on the centre of which bore W. $\frac{1}{4}$ S. and the S.W. point of Timor N. $\frac{1}{4}$ E. The same day H.B.M. ship Hind had soundings in 6 fathoms coral rocks in the same bearings.

517. The Sahul Bank is said to be dangerous in some places, *Sahul Bank.*

but there is reason to believe that it is not so extensive as laid down in the charts, where it reaches from 10° 40′ to 11° 30′ S., commencing near the E. point of Rotti, and stretching to the eastward upwards of 2 degrees.

As the dangers of this bank have never been examined, it should be avoided, and vessels should not stretch over so far to the southward in sailing along the S. coast of Timor.

Rotti Strait. 518. The strait of Rotti seems to be free from dangers; in some parts there are soundings in 60 fathoms, decreasing towards Rotti.

The W. coast of Rotti is fronted by some islands between which there is a passage.

Minstrel Passage. 519. Captain Barnes, of the English ship Minstrel, May 13, 1820, passed between Douw, which is the westernmost island, and the two smaller ones adjacent to the N.W. point of Rotti, which he thus describes:

"At 10 A.M. the S.W. end of Rotti and an island farther to the southward in one bearing E.S.E. ¼ E. and the S.W. point of Douw N.E. b. N. At 10½ A.M. passed between Douw and a small island bearing nearly E. from it; the channel appeared to be 2 miles wide, but a reef projects about 2 miles from the S.E. end of Douw, and another reef projects from the W. end of the small island 1½ or 2 miles. Borrowed on the Douw shore to 8 fathoms, had 10½ fathoms in mid-channel, and in hauling a little to the eastward had 12 and 14 fathoms; then no bottom. These soundings seemed to be on a ridge stretching across the channel from one island to the other; and a strong current was setting through to the northward. When in deep water, steered N. b. E., to pass at a proper distance on the W. side of another small island that lies to the north-eastward of the former small island, and which has a reef projecting to a considerable distance from N. to W.: Douw appeared to be well inhabited and very fertile. At noon he observed in 10° 45′ S. and 122° 44′ E., Douw bearing from S. b. W. to S.W. b. W. the north-easternmost small island E. ½ S. to S.E. b. E., and both distant 3 or 4 miles."

The channel between Rotti and Savou is safe, and about 16 leagues wide.

SAILING DIRECTIONS

FOR THE

STRAITS OF BANCA AND GASPAR,

BY

LIEUT. H. D. A. SMITS, D.R.N.,

HYDROGRAPHER TO THE COMMISSION FOR THE IMPROVEMENT OF THE EAST INDIA CHARTS.

1847.

BANCA AND GASPAR STRAITS.

CHAPTER I.

From the Strait of Sunda to the Strait of Banca.

520. In approaching the Strait of Banca* from the southward, after clearing Sunda Strait, the islands of North-watcher and the Two Brothers, with the banks of Arnemiden, Omega, Brouwer, and Shahbunder, will be the first to require the attention of the seaman; a description of which, with other shoals in their vicinity, has been already given in Arts. 103 to 118, of the Seaman's Guide round Java.

521. The east coast of Sumatra is generally low, and covered with wood to the water's edge, and does not therefore present much variation in its aspect. *Sumatra, E. Coast.*

522. The Sapoeti River, the mouth of which is in 4° 44′ S., may be approached as near as 3 or 2 miles. H.N.M. steamer Vesuvius anchored, in April 1846, in 3½ fathoms, with the mouth of the river bearing W.N.W., Cape Scopong S. b. W., and the northernmost visible land N. b. W. North of this river, along the coast of Sumatra, the broad and hard sandbank, of Toelang projects as far as 14 miles from the shore; but its south side, bending in to the northward, forms a kind of bay. The same steamer searched in vain for a passage inside of this bank, and grounded in the attempt. After getting off, she steered S. b. E. till the Sapoeti River bore W. b. S., and then steering east, she had 5 to 7 fathoms upon a hard ground. By edging in to the N.E., she at once shoaled to 3 fathoms, but by hauling out S., the depth increased rapidly to 9 fathoms, soft ground, having the river about 4 miles W. b. N. According to the reports of the natives there is, however, a kind of passage between the bank and the Toelang river. *Sapoeti River.* *Toelang Bank.*

523. The mouth of the Toelang river lies in 4° 21′ S., and may be closely approached; H.N.M. steamer Vesuvius anchored in 4 fathoms, 3 miles N.E. b. N. from its mouth, and despatched *Toelang River.*

* *See* Chart of Banca and Gaspar Straits.

some armed boats up the river in search of pirates, who sometimes hide themselves there. Near its mouth there is a small Campong (village), and 3 days' journey higher up, according to *Mangala Town.* the accounts of the natives, a town, called Mangala, where the Rajah resides. The boats crossed a bar in the mouth of the river, having only one fathom depth, but inside of it, and as far as 14 or 15 miles, they had 3 and 4 fathoms. A mile north of the mouth they observed another river, and a third one in 4° 6′ S.

Tree Island. 524. Tree Island is in about 3° 43′ S., and close to a point of land to which it is joined at low water. N.E. and S.E. from it a shallow bank projects to a great distance from the coast, with many dangerous, and occasionally dry, patches. H.N.M. ship-of-the-line Tromp, in August 1819, grounded upon one of these patches in 3¾ fathoms, a hard sand, S. ¾ W. 9 miles from the east point of the island. At high water she got off, and steered W.N.W. till in 5 fathoms, and then N.E. in 4 and 4½ fathoms, till she sighted Lucipará Island.

Arend Bank. 525. A 4½-fathoms bank was examined in September 1845, by H.N.M. brig Arend, for which purpose she anchored on its N.E. side, in 5 fathoms, the coast of Sumatra being just visible from the deck, bearing W.S.W. ¼ W. Correct observations, which agreed exactly with those of H.N.M. steamer Bromo, made four days afterwards, placed it in 3° 46′ 30″ S., and 106° 17′ 24″ E. This bank is 2 miles long, and the same in breadth, consisting of a fine grey sand with broken shells, and from 4½ to 6 fathoms water over it, surrounded by a depth of 6 fathoms, which rapidly increases, and a soft bottom.

Boreas Bank. 526. A 5-fathoms bank had been examined by H.N.M. corvette Boreas, in December 1835, and placed in 106° 28′ 30″ E., but H.N.M. brig Windhond passed over both of these banks in March 1843; she steered from 8 o'clock to 11 A.M. N. b. E. 11 miles, in 6, 5, and 9 fathoms; then tacked, and stood W. ¼ S. 4 miles, till noon, when she had 5 to 7 fathoms. At 8 o'clock A.M. the longitude, by means of two correct chronometers, was 106° 28′ E., and the latitude at noon 3° 47′ S. Continuing in the afternoon on the Arend, or western bank, in 5 fathoms, the coast of Sumatra was visible from the lower yards in a S.W. b. W. direction. H.N.M. steamer Merapie, in December 1846, placed the eastern, or Boreas bank, in 3° 49′ S. and

106° 28′ E., and found $5\frac{3}{4}$ fathoms water. Round it the depth increases rapidly, so much as to 10 and 13 fathoms, except on the N.W. side, where it is regular for some time with 5 and 6 fathoms, and between the two banks there is a depth of 11 to 14 fathoms. Vessels in this neighbourhood unexpectedly shoaling their water at night ought to be very careful, for many that considered themselves to be upon these banks, were in fact upon those off the coast of Sumatra, near Tree Island, and consequently were in great danger. These two banks consist of fine grey sand, while those near Tree Island are of coarse sand with gravel.

527. To avoid the banks off the coast of Sumatra, no vessel should go nearer in than 9 fathoms, and though it may be advisable by day to keep the land in sight, it should not be in less than the above-mentioned depth. If in 12 or 13 fathoms, they should haul in towards the coast.

528. The island of Lucipará in 3° $13\frac{1}{2}$′ S., and 106° 14′ E., is about 2 miles long, covered with high trees, and one side being a little elevated, can be seen from the deck in clear weather 14 or 15 miles. A reef half a mile in breadth surrounds the island; but from its east and south sides reefs project about 2 miles, many parts of which are above water; and close to these reefs there are 4 fathoms water. H.N.M. schooner Egmond, when approaching the island on the east side, found the soundings decrease suddenly from 11 to 6 fathoms, and she struck when it bore W.S.W. $\frac{1}{4}$ W., at rather more than 2 miles distance. At the stern they had 3 fathoms, amidships $2\frac{1}{4}$, and at the bows only 1 fathom, the bottom, coral; and judging from the light colour of the water, the reef seemed to be connected with the island. Capt. Torin of the Coutts, in 1798, found a rivulet of fresh water on the S.W. side of the island*. *Lucipará Island.* *Water.*

* The position of Lucipará is laid down from observations made by Captain D. Ross, B.I.N., 1818, the longitude being dependent on that of Batavia. *Lucipará Position.*

		° ′ ″	° ′ ″	
Capt D. Ross - - - - -	1818,	3 13 30 S.		
H.N.M. brig Irene - -	1819,	3 12 18 „		
„ corvette Euridice -	1824,	3 12 0 „	106 13 27 E.	
Capt. Laurens - - - - -	1831,	3 15 48 „	106 13 6 „	2 days' in-
Capt. Glazener - - - -	1831,	3 14 50 „		[terval.
H.N.M. schooner Egmond -	1840,	..	106 16 30	
„ corvette Hippomenes	1840,	..	106 13 10 „	4 days' „
„ frigate Rotterdam	1841,	..	106 14 10 „	1 day „

Wreck. A wreck about 5 leagues to the southward of the island, the masts of which were visible above water in 1845, is said to have disappeared. H.N.M. schooner Egmond, in 1841, anchored half a mile S. of it with the following bearings:—St. Pauls Mount N.N.E. $\frac{3}{8}$ E.; Lucipará (centre) N.-westerly; the northernmost visible land of Sumatra N.N.W. $\frac{3}{4}$ W.; the hill of Ali Lama N.N.E. $\frac{1}{2}$ E.; and the S.E. point of Banca N.E. $\frac{3}{4}$ N. They found the vessel to be sunk in $6\frac{1}{2}$ fathoms, with the stern to the E.S.E., and abreast the masts a depth of 9 feet water.

Java Sea. 529. The depths in that part of the sea of Java between the North-watcher, the two Brothers, and Lucipará, are, except the $4\frac{1}{2}$ and 5 fathoms banks of Arend and Borcas, tolerably regular from 10 to 16 fathoms; but nearer to Sumatra, about 7 or 8 leagues from the coast, they become irregular, changing often, and suddenly, from 10 to 5 and 6 fathoms. About 3 miles S. from Lucipará, in the usual track towards the strait of Banca, the water shoals gradually from 6 to $4\frac{1}{2}$ fathoms.

Currents. 530. The currents in the sea of Java are for the most part influenced by the reigning monsoon, and are generally stronger during the western than in the eastern monsoon. They incline to the northward or southward, according to the influence of the currents of the straits of Sunda, Banca, and Gaspar; for, during the western monsoon they run to the eastward, or more southerly, according to the set of those which come from the straits; and in the eastern monsoon they run to the westward, or more northerly from a similar cause. Through a succession of tides which were observed, chiefly during the eastern monsoon, it was found that those which followed the direction of the monsoon were stronger and of longer duration, so that a daily allowance may be made in the eastern monsoon from 8 to 12 miles, and in the western monsoon from 20 to 24.

North-watcher to Lucipará. 531. Vessels bound towards Banca Strait, and having reached the North-watcher, may pass its western side at 2 miles distance; but to the E. they should not come nearer to

Position Lucipará continued.

			° ′ ″	° ′ ″	[val.
H.N.M. steamer	Phœnix	1841,	..	106 15 0 E.,	1 day inter-
„ brig	Windhond	1843,	3 13 17 S.	106 13 7 „	7 days' „
„ brig	Zwaluw	1843,	..	106 10 40 „	
„ frigate	Palemberg	1844,	..	106 16 33 „	4 days' „
„ steamer	Bromo	1845,	..	106 14 0 „	1 day „
		Mean	3 13 37	106 13 58	

it than 3 miles, nor from it farther than 12 miles, in order to avoid the Omega and Arnemiden Banks.

The North-watcher being passed, vessels may steer between N. ½ W. and N.N.W. direct for the Lucipará Passage; but with a westerly wind they should keep well to the westward, so as to approach the banks of Sumatra in 9 or 10 fathoms water, but never at a less depth at night or in thick weather. The lead, however, is not a sufficient guide, because of the Arend and Boreas Banks, which might at night, or in thick weather, be mistaken for those of Tree Island. It is therefore advisable to keep to the westward during the day, sighting the land occasionally; and during the night, according to circumstances, to haul off, but not farther than in 12 or 13 fathoms, because with westerly winds in that depth she would be too far from the shore.

Having arrived in 3° 40′ or 3° 30′ S., the coast of Sumatra may be approached with more safety, and a vessel may run with Lucipará in sight between N. ½ E. and N.W. in 5½ to 7 fathoms depth.

532. Vessels bound to the Strait of Banca, and having arrived as far as the Two Brothers, may pass them close on either side, and steer N. ½ E. to N. by E. ½ E. towards Lucipará, provided they remain in 9 to 12 fathoms water. *Two Brothers to Lucipará.*

Though the depth is very irregular in some places, and decreases sometimes from 11 to 8 fathoms, and, near the banks of the coast of Sumatra, suddenly to 5 fathoms, it is, however, advisable to approach that shore when in 12 fathoms, and to keep off when in less than 9 fathoms.

In the vicinity of those banks the bottom is generally harder, and the depths more irregular, than farther from the coast in 12 or 13 fathoms. When the banks off Tree Island are passed, the coast may be safely approached; and towards Lucipará the water shallows regularly to 5½ fathoms, at a distance of 10 miles S. ½ W. from the island.

If at night a vessel should come into shallow water between the Two Brothers and Lucipará, and not being certain whether she is on either the Arend or the Boreas banks, or that of Sumatra, it is advisable to anchor immediately, and to wait for daylight. When passing between the Two Brothers and the Shahbunder Shoal, a vessel should not approach those islands nearer than a mile, nor yet keep farther from them than

3 miles; and not nearer to the coast of Sumatra than in 9 fathoms.

On passing to the eastward of the Two Brothers, a proper distance must be kept, on account of the Brouwer Bank, which lies N.E. by E. $\frac{3}{4}$ E., about 12 miles from the Two Brothers, with 14 to 15 fathoms close to it.

Lucipará Pass or Western Channel.

533. The track mostly used for entering Banca Strait from the southward lies between the island of Lucipará, and the green elbow of Sumatra, nearly due west from it, called Lucipará Point. From 10 miles south of Lucipará Island, to the pass between it and the above point, the depth decreases from $5\frac{1}{2}$ to $4\frac{1}{4}$ fathoms. On the western side of this pass a mud bank projects from the Sumatra coast 2 miles and more, and on the E. side, N. and N.W. from Lucipará, there are various hard and dangerous sand-banks, which narrow the breadth of the passage to 2 miles.

Banca or Eastern Channel.

534. The passage between Lucipará and Banca would have great advantages in entering or leaving the strait of Banca, were it not encumbered so much with shoals and banks, the positions of which are not known correctly, and which render this passage unsafe, at least for large vessels, although Commodore Watson took the Revenge by night to the eastward of Lucipará, into the strait of Banca, and had not less than $5\frac{1}{2}$ fathoms water. For vessels of light burden and beating up against the western monsoon, this eastern channel into the strait is very desirable, as it is almost impossible to make any progress against the strong and continual currents in the Lucipará passage.

Tides.

535. The tides in the Lucipará pass are strong but irregular, and are greatly influenced by the monsoons. Sometimes there are two, but generally only one ebb and flood in the 24 hours, the former running to the southward and the latter running to the northward. During the months of January, February, and March, at the greatest strength of the N.W. monsoon, the southern current continues often from 14 to 18 hours successively, with a velocity of from 2 to $3\frac{1}{2}$ knots; the flood-tide is then very trifling, and sometimes not at all perceptible. On the contrary, during the S.E. monsoon, the stream of flood runs sometimes 14 to 18 hours with great velocity into the strait, and the ebb runs out during the other 10 or 8 hours

with but little strength. Between the monsoons flood and ebb succeed each other generally every 12 hours, and the one or the other is then stronger, according to the wind being northward or southward. The rise of an ordinary tide is 5 to 7 feet, and a spring tide 9 to 10, and sometimes 12 feet; but the average rise seems to be much greater during the eastern monsoon than during the western.

Dangers north of Lucipará.

536. The banks N. and N.W. of Lucipará are for the most part long and narrow strips, except one round shoal, which is very dangerous, carrying but $2\frac{1}{2}$ to $1\frac{1}{2}$ fathoms, and lying near the south side of the projecting spit which obstructs the eastern side of the pass. The western edge of this round shoal lies N.W. $\frac{3}{4}$ W., 8 miles from Lucipará, and S.S.E. 9 miles from Eerste (First) Point.* Close to it there are 4 to 5 fathoms, and at a mile from it, or in the middle of the passage, which at that place is only 2 miles wide, 6 fathoms. H.N.M. frigate Diana, and many other vessels that have grounded upon the edges of this or the other hard sand-banks on the E. side of the pass, all sustained much damage. In the correct chart of Captain D. Ross, published in 1818, these dangerous spots are so well laid down, that pointing out the places where the vessels struck is needless.

Mud Flat off Sumatra.

537. Many vessels have grounded on the mud flat which surrounds the coast of Sumatra, especially on that part which projects from a point about 2 miles south of Eerste Point, where the flat extends farther out, and have all been obliged, before they could get off, either to transship or to throw a part of the cargo overboard, as the anchors which were laid out on the soft muddy bottom to heave her off came home. This part of the flat shoals suddenly from 6 to 3 fathoms, and therefore should never be approached into less water than $6\frac{1}{2}$ fathoms. More to the southward, in the narrow part of the pass, the flat may be safely passed in $4\frac{1}{2}$ fathoms. Near Eerste Point the flat is steep, and must not be approached, especially N.E. of it, in less than 12 to 10 fathoms, those depths extending to the distances of 1 to $1\frac{1}{2}$ miles.

Dangers near Eerste Point.

Eastward of that point lie two banks, upon the westernmost of which Captain D. Ross did not find less than $4\frac{1}{2}$ fathoms, but

* The Dutch names Eerste, Tweede, &c., are employed here by way of distinction, from the First, Second, Third, Points, &c., of the Strait of Sunda.

Merapie Bank. on one spot, where there are only $2\frac{1}{4}$ fathoms. H.N.M. steamer Merapie, returning from Singapore in May 1846, when passing Eerste Point, and steering S.E. $\frac{1}{2}$ S., found no bottom with the hand-lead, but immediately afterwards had only 3 fathoms. After stopping the engines, the following observations were taken near that spot, viz., the highest top of Parmasang Hill N.N.W., northerly; Lucipará S.S.E. $\frac{3}{4}$ E., and Eerste Point N.W. b. W. $\frac{3}{4}$ W.

Vesurius Bank. 538. H.N.M. steamer Vesuvius, returning to Batavia from Singapore, in August 1846, came suddenly upon a 4-fathoms patch, hard bottom, and anchored on it, with Eerste Point N.W. by W. $\frac{7}{8}$ W., Lucipará S.S.E. $\frac{5}{8}$ E., the west end of Parmasang Hill N.N.W. $\frac{1}{2}$ W., and the southernmost visible land of Sumatra S. $\frac{3}{4}$ W. In a S. by W. direction from the patch, the boat had $4\frac{1}{4}$, 4, $3\frac{1}{2}$, 4, 3, 4, and 6 fathoms, hard bottom; afterwards 5, 6, 7, 8, 9, 10, 11, 12, 10, 8, and 5 fathoms, upon a soft bottom, close to the edge of the Sumatra Bank. When the boat was returning, she came upon $2\frac{3}{4}$ fathoms, hard bottom, about 2 cables' lengths N.W. by W. from the steamer; it was at that time low water.

Hindostan Bank. 539. In May 1798, the Hindostan grounded upon a more eastern bank in 3 fathoms, Lucipará bearing S. by E., a little hill upon the S. side of Banca having the appearance of an island, E.S.E., a rocky point about E., the low land near Lalarie Point N.W. $\frac{3}{4}$ W., and the low land about Eerste Point, W.S.W. $\frac{1}{2}$ W. Round the bank there were $4\frac{1}{2}$ and 5 fathoms.

540. In Lucipará Pass the bottom is generally hard sand on the banks towards the E. side, and soft mud on the W. or Sumatra side, yet close to the north-western edge of the sand-bank, north of Lucipará, the bottom is also soft, with $5\frac{1}{2}$ and 6 fathoms, it is therefore advisable not to keep in too hard, or too soft bottom, but in the middle of the pass.

Making Lucipará. 541. On coming from the southward towards Banca Strait, the island of Lucipará is generally made between the bearings of N. by E. and N.W., and in $5\frac{1}{2}$ to 8 or 9 fathoms; but should it, when first seen, have a more western bearing, the vessel must run to the westward till it bears north 4 miles: and then, by steering N.W., she will pass between it and Lucipará Point, which bears W. by S. 9 miles from the island. With westerly winds it is advisable to keep on the western side of the pass

in $4\frac{3}{4}$ to $5\frac{1}{2}$ fathoms. The depth towards Lucipará increases to 6 and 7 fathoms when the island bears between E.N.E. and S.E. by E., on which side it may be approached as near as 2 miles.

In clear weather, when Parmasang Hill is visible, with its western side in one with Eerste Point N. by W. $\frac{1}{2}$ W., and Lucipará E.N.E., a vessel will be in the middle of the passage; and when the island bears E.S.E. $\frac{1}{2}$ E., and Eerste point is still in one with the west end of Parmasang Hlll, she will be in 5 or $5\frac{1}{4}$ fathoms, but will soon shoal to $4\frac{3}{4}$ or likely to $4\frac{1}{2}$. From thence she should steer N. by W. or N.N.W., keeping Eerste Point in one with the highest peak of Parmasang Hill; and when Lucipará bears S.E. by E. $\frac{1}{4}$ E. the water will deepen to 6 and $6\frac{1}{2}$ fathoms, as she will have passed the shallowest parts, though she will then be in the narrows part of the pass. Continuing with Eerste Point in one with the W. peak of Parmasang Hill, till Lucipará bears S.E. $\frac{1}{2}$ E., and being then just to the westward of the southernmost bank, she should steer N. by E. to avoid the projecting mud bank (Art. 537); bringing Eerste Point to bear N.N.W., or a little open to the westward of Parmasang Hill, and nearly in one with Lalarie Point. If, by the haziness of the weather, the hill is not visible, she ought to keep at 3 or 4 miles from the coast of Sumatra, but taking care not to bring Lucipará S.E.$\frac{3}{4}$ E. before Eerste Point bears N. by W. $\frac{1}{2}$ W. When the vessel comes within 6 miles of that point, she ought to keep a little farther from the coast, to avoid the edge of the mud flat, upon which so many have struck. Eerste Point brought N. by W. $\frac{1}{4}$ W. when Lucipará is S.E. $\frac{3}{4}$ E. will keep her clear of the mud bank.*

542. To avoid Merapie Bank when Eerste Point bears N. W. by W. $\frac{3}{4}$ W., keep either less than $2\frac{1}{2}$ miles from the *Merapie Bank.*

* In March, 1845, Capt.-Lieut. J. W. Schuler, in H.N.M. brig Zwaluw, when entering the narrowest part of the Lucipará Pass, kept along the edge of Sumatra Flat in 4 to 3 fathoms, having Eerste Point open to the eastward of the whole of Parmasang Hill. "Though by following the mark," he says, "the dangerous banks N.W. of Lucipará are better avoided, yet, I did not think it right to give it too positively in my directions, because it was high water when I passed, and at low water this mark would probably lead deeper vessels into danger; but all vessels, in the narrow part of the pass, when Lucipará is yet to the eastward of S.E. by E. $\frac{1}{2}$ E., may safely approach, and run along the Sumatra Flat, by the lead, provided it be kept constantly going."

point to pass between them, or more than 3 miles to pass to the eastward of the bank. In clear weather Lucipará will be visible from the deck, and a vessel should be careful not to have that island between S.S.E. $\frac{1}{2}$ E. and S.S.E. $\frac{3}{4}$ E., when Eerste Point bears N.W. by W. $\frac{3}{4}$ W.

543. Vessels coming from the southward, and being about midway between Lucipará and Sumatra, must bring Eerste Point as soon as it becomes visible, N. b. W. $\frac{1}{2}$ W., or exactly in one with the western end of Parmasang Hill, and keep Lucipará Point S. $\frac{1}{2}$ W. till Lucipará bears S. E. $\frac{3}{4}$ E.; Eerste Point will then be about 8 miles distant, and they may then keep a little off shore till it comes to the westward of N.N.W., or in one with Lalarie Point, in order to avoid the Sumatra Bank.

Another safe mark is, to bring Lucipará Point between S. $\frac{1}{2}$ W. and S. by W., and Lucipará not more to the southward than S.E. $\frac{3}{4}$ S. till about 5 miles from Eerste Point, when the vessel will be to the northward of the outer bank, and therefore Lalarie Point may be opened considerably of Eerste Point, in approaching the latter.

To pass between the Merapie Bank and Sumatra, keep the shore at the distance of about 2 miles, and not more than $2\frac{1}{2}$; but do not bring Lucipará to the southward of S.S.E. $\frac{3}{4}$ E. before Eerste Point bears W.N.W. If going to the eastward of this bank, keep at least 3 miles from the Sumatra shore, taking care not to bring Lucipará to the eastward of S.S.E. $\frac{1}{2}$ E. before Eerste Point bears W.N.W.; but Lucipará must not be kept more to the southward than S. b. E. $\frac{1}{4}$ E., to avoid the Hindostan Bank.

Coming from the Northward.

544. Coming from the northward Eerste Point must be rounded at 2 miles distant, and Lucipará should not be brought to the southward of S.S.E. $\frac{3}{4}$ E. before Eerste Point bears N.W. b. W., in order to pass between Sumatra and the Merapie Bank; and to pass to the eastward of this bank, keep the vessel at least 3 miles from the point and Lucipará to the southward of S.S.E. $\frac{1}{2}$ E. till it bears N.W. b. W.; remembering, however, that Lucipará must not be brought more to the southward than S. b. E. $\frac{1}{2}$ E., on account of the Hindostan Bank. Now keep Eerste Point open of the western end of Parmasang Hill, or in one with Lalarie Point, but nevertheless to the westward of N.N.W. till Lucipará bears S.E. $\frac{1}{4}$ E.; thus bring

ing it gradually in one with the western end of Parmasang Hill, N. b. W. ½ W., in which direction it should be when Lucipará bears S.E. ¾ E. When this island bears E.S.E. haul towards it, as the water is deepest on that side of the pass, and as it can be approached on its western side as near as 2 miles; but southward of it keep at least 3 miles off, on account of the reef which projects in that direction. Lucipará Point bearing from S. ½ W. to S. b. W., will lead through the narrow part of the pass. The Sussex, after having rounded Eerste Point, kept a hummock on Banca N. b. W. northerly till the point came in one with the saddle of Parmasang Hill, and while the hummock on Banca was still visible from the deck they had 7 fathoms water; but the Lowther, keeping the same hummock N. b. W., struck, in 3¾ fathoms, upon the outer or eastern Lucipará Bank.

Channel along Banca.

545. The eastern channel along Banca is not sufficiently known to give any authoritative sailing directions for it; but as it is in many cases preferable for vessels of light burden, I shall give what little information I have at my command.

The S.W. point of the island of Banca is in about 3° 6′ S. and 106° 32′ E., and at the foot of Mount Ali Lama, which has, at some distance, the appearance of an island. The two small islands of Dapoer, joined by a sand-bank and Lama, are separated from the S.W. point by a narrow passage, which is said to be 8 or 10 fathoms deep.

Dapoer Islands.

Toboe Ali Fort and Road.

546. The fort of Toboe Ali, and the village called Sabang, which is near it, stand upon a small promontory about 7 miles N.W. by N. from the W. point of Lama. The anchorage in this road is in 3½ fathoms, with a soft bottom, having Goenong Payang, or St. Pauls Mount (which lies N.E. ½ E from Lucipará, and is about 930 feet high), E.N.E., Mount Ali Lama S.E. ¾ E., and the W. point of the bay N.W. by W. From thence the shore trends with a few inlets W.N.W. ½ W. towards Lalarie Point.

H.N.M. schooner Janus, in the beginning of October 1843, from Minto to Toboe Ali, after passing, ran 2 or 3 miles to the southward of Lalarie Point; and was obliged to keep very much to the southward to avoid the strong current running along the Banca shore. When the two hills which are near the coast bore N. b. W. ¼ W. and N.N.E. ¼ E., she had sound-

ings in 18, 16, and 12 fathoms. The gale and the current obliged her to anchor in 7 fathoms, having the easternmost of those hills N.N.W. ½ W., and the western point of Toboe Ali Bay E.S.E. ¾ E. Having again weighed, she steered S.E. and S.S.E. till she sounded on the eastern bank in 3½ fathoms.* Continuing to the eastward, she had 6 fathoms, till hauling in towards the hills of Toboe Ali, she again reached the bank in 3¼ fathoms. On an E. b. S. course the depth increased to 9¾ fathoms, and then steering S.E. it shoaled to 5, 4, and 3 fathoms, when the fort of Toboe Ali bore E. by N. The red roof of the barrack, to the westward of the flag-staff, is visible at a great distance.

H.N.M. brigantine Dolphin, in May 1845, on entering the strait from Toboe Ali, had frequently only 3 fathoms water.

Lieut. van Kervel, who cruised for some time in these waters, says, "We sailed with a free wind from N.W. through this passage, and kept E. b. S. to S.E. b. E., approaching the coast of Banca in 5 fathoms, and the bank in 3 fathoms. Having been at anchor under Banca in 5½ fathoms water, on weighing we cast the wrong way, and five times had 2½ fathoms; but on the opposite tack 5 fathoms were had three times successively."

Captain-Lieut. Schuler, who was employed in these seas, says that the depth in the best passage is 7 fathoms, shoaling gradually with a soft bottom towards the Banca shore; but in approaching the banks the depth increases and the bottom becomes harder.

547. To the southward off Toboe Ali the channel seems to be very clear, even close up to the shore, as at noon on the 14th May, 1845, H.N.M. brigantine Dolphin had 15 fathoms with the eastern point of Dapoer Islands N.E. b. N.; but the thickness of the weather preventing them seeing the shore, they proceeded, under easy sail, N.N.W., and sounded in 14, 9, to 5 fathoms, till it cleared up, and the fort of Toboe Ali became visible, bearing N.N.W. Vessels may keep close under the lee of Dapoer Islands, there being at 2 miles from them 10 fathoms water. A vessel to the southward of Lucipará meeting N.N.W. winds, and wishing to get into the Toboe Ali channel, should steer direct for Lama Point.

* In her log-book, the soundings between the anchorage and the shore are not mentioned.

CHAPTER II.

Banca Strait from the Southward.

548. The Strait of Banca separates the islands of Banca and Sumatra, and trends with many bendings to the north-westward. *Sumatra Coasts.*

The coast of Sumatra is very low, densely covered with wood, and offers no other variation than a few points, or rather roundings, which are only clearly distinct at short distances, and are easily mistaken for the so-called false points, which are observed immediately after rounding the real points. The shore being inundated at high flood, the distance from it is generally over estimated.

The island of Banca is covered with hills and mountains, varying from 930 to 2320 feet in height; and it is remarkable that, notwithstanding their comparatively small height, their summits are generally covered with clouds, which accounts for the erroneous height given to these hills by various authors who have estimated them at upwards of 9000 feet.

The whole coast of Sumatra is surrounded by a mud flat, which is narrower off the points, but in some of the bights, from 2 to 4 miles wide. Towards the Banca side the bottom becomes gradually harder, and even rocky. Besides a few small islets and rocks, we find in this strait the group of Nangka Islands, where vessels sometimes proceed to procure fresh water and wood. Many rivers discharge themselves into the strait, of which the principal are the Soensang and the Assing, both navigable to a great distance for vessels of heavy burden. Near the western point of Banca lies the capital of the colony (or residency) of that name, called Minto, and its roadstead is much visited by the coasters that supply the Chinese miners with rice.

549. The winds in the strait of Banca follow the direction of the coasts, though with slight variations from the influence *Winds.*

of the land and sea breezes; and we may always expect, when working against the monsoon, fresh breezes.

Tides. 550. The flood-tide, entering the strait from the southward out of the sea of Java, meets another flood, about the Nangka Islands, coming from the northward out of the China Sea. The direction of the streams is entirely influenced by the windings of the strait, forming, at their meeting, whirls and eddies in the bights of the land. What has been before stated respecting the Lucipará Pass, relating to the direction and duration of the tides, is, for the most part, applicable to this strait, with this exception, that in the northern parts, during the N.W. monsoon, the southern current or flood remains longer and is stronger than the ebb, and the reverse during the eastern monsoon. The velocity of the tides is sometimes 2 or 2½ knots, and the range of tide from 7 to 12 feet, and sometimes more; and in the mouth of the rivers the water during the western monsoon, from the heavy rains which prevail at that period, is much higher than during the eastern monsoon.

Eddies in the Bights. When beating through the middle of the strait during the strength of the monsoons, continuous and contrary currents are certain, and the skilful seaman will therefore find great advantage in availing himself of the eddies, as well as of the more regular changes of tide, by standing into the bights and bays in those parts of the strait where he can safely approach the land.

Inshore Tides. In the Toboe Ali Channel, in the bay north of the Nangka Islands, and in the passage between Brum Reef and Banca, we meet, even in the western monsoon, a pretty regular succession in the roadstead tides. I have often observed, when passing the road of Minto,* that the vessels were lying with their heads in a contrary direction to those at anchor upon the bank outside. In that road the flood comes from the westward, and the ebb from the eastward; but near the mouth of the Palembang or Assing river the contrary occurs; the flood there runs west, and the ebb east. In the bays between Eerste and Tweede Point, and again between Derde and Vierde Points, there are probably eddies of which vessels of light burden may make use, and heavier vessels may no doubt, in many places, run close enough to the shore to keep out of the influence of the currents.

* Many other mariners have made the same observations.

H.N.M. brig Windhond, in September 1844, anchored in 8 fathoms, having Monopin Hill N.N.W. ½ W., and Vierde Point W. ½ S.; and the following night in 7 fathoms, with Lalarie Point E. b. N., and the highest peak of Parmasang Hill N.N.E.; she lay at both places entirely out of the stream, though it was very strong farther from the shore.

551. Eerste Point, in 3° S., and N.W. ¾ N. from Lucipará, is covered with wood, and pretty steep on its N.E. side; but at 1 or 1½ miles from it there is a depth of 10 to 12 fathoms. *Eerste Point.*

The shore runs from thence with a slight indentation towards False Eerste Point, which lies N.W. b. W. ½ W., rather more than 5 miles from the former, and S. ⅔ E. from Lalarie Point; it then sweeps round to the westward and northward for 19 miles towards Tweede Point. Lalarie Point, or Tanjong Panggong, lies N.W. b. N., 10 miles from Eerste Point. At a mile from it there are 16 fathoms, but at half a mile only 2½ fathoms. *False Eerste.*

552. Tweede Point lies S.W. b. W. ¾ W. from the summit of Parmasang Hill, and N.W. b. W. nearly, from Lalarie Point. About 12 miles S. ¾ E. from it lies False Tweede Point, which is difficult to distinguish. The high tree which formerly stood near Tweede Point, and was visible at a great distance, no longer exists. At 2 or 3 miles to the eastward of this point there are 11 to 12 fathoms, but it should never be approached in less than 10 fathoms, as it shoals very quickly to 3 fathoms. *Tweede Point.*

H.N.M. frigate Diana, struck thereabouts, and had much trouble in getting off. H.N.M. brig Windhond, going round the point, had 3 fathoms at a mile east from it.

553. The middle of the strait should generally be taken, and it is advisable to leave not less than two-thirds of the breadth of the strait towards Banca. In running from Eerste Point towards Tweede Point it is recommended to keep in 12 to 18 fathoms; not to exceed two-thirds of the width of the strait towards Banca; and to keep 3 miles off the coast of Sumatra. *Course up the Strait.*

554. The Timbaga Rocks become partially dry, and, according to Commander Goldsmith, of H.B.M.S. Hyacinth, consists of three patches lying about 2 miles from the coast of Banca.* *Timbaga Rocks.*

* It is said that there are a few cocoanut trees on one of them.

In December 1812, the Discovery, Captain D. Ross, anchored near those rocks in 10 fathoms, and sounded with the boat round the edge of the bank in 7¼ fathoms, all coral, and crossing the reef had 2 and 1½ fathoms, alternately rock, sand, and mud. From the dry place on the rock Tweede Point bore W. ½ N., and Poulo Pemein, or White Island, N. ½ E., Parmasang Point N. ¾ E., the peak of Parmasang Hill N.N.E. ½ E., Lalarie Point S.E. b. S., and Great Nangka N. b. W. ½ W. H.N.M. brig Irene observed this rock, in a line with the highest Parmasang Hill, N.E. b. N. nearly.

The Goodhope, in June 1814, having suddenly shoaled from 19 to 10 fathoms, anchored and had 6 fathoms rocky bottom at her stern 4½ fathoms from the main-chains, and 8 fathoms at her bow. Tweede Point bore W. ¼ S., Lalarie Point S.E. ¾ S., the peak of Parmasang Hill N.E. ¾ N., and a rock above water, 2 miles distant, E.S.E. ½ E. Her captain describes this danger as a long narrow ridge of rock and sand, extending about 2 miles N.W. and S.E. The first of the flood sets strongly to the N.N.E., breaking over the reef, and the latter part to the N.N.W. Her boat had 12 and 13 fathoms between the vessel and the reef, and 7 fathoms close to it: from the latter depth Tweede Point bore W., and Lalarie Point S.S.E.

Captain Rush of the Royal Charlotte, in January 1813, observed soon after noon, a little above water, a rocky reef, which he thought would be probably covered at high water. It lay about 2 miles from the Banca shore, and was about three-quarters of a mile long. At 2 miles east from the reef Tweede Point bore W. ¾ N., Lalarie Point S.E. ½ S., and Parmasang Hill N.E.

H.N.M. schooner Windhond, Lieut. Van Kervel, coming from the northward, steered S.S.E. ½ E., between the Timbaga and Banca, carrying irregular soundings of 9, 6¼, 7½, 9, 4, 7½, and 8¾ fathoms, at which time those rocks bore W.S.W. ¼ W., Tweede Point W., and the summit of Parmasang Hill N. b. E ½ E.; the difference in depth at the opposite sides of the vessel being 1½ fathoms, and the bottom consisting of clay or sand.

Sonjie Bolan Watering-place.

555. Behind these rocks there are two small rivers, called Sonjie Bolan, at the mouth of which, in 1831, the Windhond anchored in 7 fathoms, having Lalarie Point S.S.E., Timbaga Rocks S. ¾ W., and Tweede Point W. by S. From two o'clock

till half-past six he obtained six boat-loads of water, which was of a red, brownish colour, but very good.

Reef south of Timbaga.

According to an account given by two Arab commanders of coasters, there is another danger 4 miles south of the Timbaga Rocks, upon which they had 3 fathoms water.

Parmasang Hills.

556. Parmasang is a chain of hills, the highest of which is 1300 or 1400 feet above the level of the sea, and in 2° 38′ 36″ S. When seen from the northward another peak appears to be the highest, owing to the north-eastwardly direction of the chain. The headland in front of these mountains is steep-to, at a short distance from it, there being 5 fathoms water. To the northward of it lies the small rocky islet of Pemein.

Parmasang Head.

Kotta and Selan Rivers.

557. Between the head and the Nangka Islands, the coast of Banca forms a large shallow bay, into which the rivers Kotta and Selan discharge themselves. H.N.M. schooner Windhond, anchored in 1831 at the mouth of the former in $4\frac{1}{4}$ fathoms, having the double white rock of Pemein S. b. E. $\frac{3}{4}$ E., Parmasang Hill S. E. $\frac{1}{2}$ E., and the Great Nangka N.W. b. N.; and afterwards, at the mouth of the River Selan, in $2\frac{3}{4}$ fathoms, with its mouth N.N.E. $\frac{3}{4}$ E., the N. point of Great Nangka N.N.W. $\frac{3}{4}$ W., Pemein S. b. E., and Parmasang Hill S.S.E. $\frac{3}{4}$ E.

Pemein Islet.

Nangka Islands.

558. The Nangka Islands are three in number; the easternmost, called Great Nangka, is elevated in the middle, and slopes down towards the southward. The two other islands, called West and Middle Nangka, are less elevated. Many prefer these islands as watering-places, to North Island off the coast of Sumatra. The anchorage is in 7 fathoms, clayey bottom, with Great Nangka bearing from N.N.E. $\frac{3}{4}$ E. to N.E. b. E., Parmasang Hill S.E. b. S., and Marass Mountain N. $\frac{1}{2}$ E. Between Great and Middle Nangka, from both of which reefs project, there is a narrow but deep passage. Vessels of light burden can anchor also to the northward of these islands in $3\frac{1}{2}$ to 4 fathoms, but the ground is bad.

Watering-place.

559. On the west side of Great Nangka there are some springs from which H.B.M. ship Belliqueux, and her convoy of 7 sail, were provided with water in March 1811. On the N.E. side there is a better and more plentiful supply of water, with a more convenient landing-place in a creek, which has a fine sandy bottom. The whole of the west coast is surrounded

by a reef. The watering-place is easily to be recognized at low water by the brownish colour of the sand, and by the stream from the spring; at high water it is necessary to land in order to find it.

Tides. During springs the tide rises 12 feet, and sometimes more. The south point of Great Nangka lies in 2° 24′ S., S. $\frac{3}{4}$ W. from the summit of Marass Mountain.

Mendu Bay. 560. North of these islands the coast of Banca forms another bay, into which many rivers discharge themselves. H.N.M. schooner Windhond anchored off the river Mendu in 4 fathoms, having its mouth E., the Medang Islands N.N.E. $\frac{1}{4}$ E., and Parmasang Hill S.S.E. $\frac{1}{2}$ E. This road is frequented by coasters, which anchor 2 miles S. of the river, in 5 or 6 fathoms.

Medang Islands.

The margin of this bay is a mud flat, mixed with stones; in some places it is 2 miles wide, and very steep near Cape Tada, as well as to the westward of it.

Derde Point. 561. Derde Point, on the Sumatra side, is somewhat higher than the coast, and has a false point to the southward. It lies W. $\frac{1}{4}$ S. from West Nangka Island, and S.E. $\frac{1}{4}$ E. from Monopin Hill; at a mile N.E. from it there are 13 fathoms, but at half a mile only 3 feet water.

Mud Bank. Round the extensive bay between Tweede and Derde Points, a shallow mud bank projects in some places as much as 4 miles, The ship Gen. Hewitt, in June 1816, anchored between those Points, in 7 fathoms, and afterwards, at 4 miles from the shore, in 6 fathoms.

The Shannon, in March 1825, had 4, 3, and $2\frac{3}{4}$ fathoms, with Parmasang Hill E. $\frac{1}{4}$ N., the West Nangka Island N. $\frac{3}{4}$ E., and Tweede Point S.E. b. S.; and $4\frac{1}{2}$ fathoms, with the same Nangka Island N.N.E. $\frac{1}{2}$ E., and Derde Point N.W. $\frac{3}{4}$ N.

H.N.M. brig Windhond, in March 1843, anchored in $5\frac{3}{4}$ fathoms, with Tweede Point S.S.E., a little southerly, and the highest Parmasang Hill E. $\frac{3}{4}$ S., but on getting underway she came into $3\frac{3}{4}$ fathoms.

562. Vessels having passed 2 or 3 miles to the eastward of Tweede Point, should steer to the northward, towards the Nangka Islands, keeping in the middle of the strait, in 20, 16, and 12 fathoms; and when these islands bear N.E. they may steer towards Derde Point, and round it at 2 or 3 miles distance. When standing between Tweede and Derde Points,

it is necessary to keep at least 4 miles from the shore of Sumatra, and not to approach the bank in less than 6 fathoms.

From Derde Point the coast trends to the westward towards Vierde Point, which lies S. ½ E. from Monopin Hill. The bank between those points may be approached to 7 or 8 fathoms, but it is better to keep 4 miles off, in from 9 to 12 fathoms; but the Banca shore must not be approached nearer than 12 or 14 fathoms when to the southward of Brum Reef, and the dangers to the westward of it. *Derde Bight.*

563. When working up the strait during the west monsoon, and having arrived as far as the Nangka Islands, it is better to wait there for a good opportunity to pass round Derde Point; or it may be prudent to cross over towards Banca above the Nangka Islands, in order to work up in Mendu Bay under the shore of Banca, which will be more advantageous than along the coast of Sumatra, because the tides change in that bay, while along the opposite coast the current runs almost unceasingly to the eastward during the western monsoon.

Eastward of Cape Tada the shore may be approached to 4½ fathoms. Most seamen prefer, however, to hug the coast of Sumatra, because it is clean as far as Vierde Point, while, on the contrary, the bank along the shore of Banca is steep, and the passage between it and the Brum Reef is very narrow. *Cape Tada.* *Brum Reef.*

564. Vierde Point may be approached, on the N.E. side, within a mile in 10 fathoms. From this point the coast trends to the westward about 7 leagues, to the exit of the Palembang rivers. At 3 or 4 miles off their mouths there are some banks, which are steep and very shallow, and should not be approached in less than 8 or 9 fathoms by vessels running through the strait. *Vierde Point.* *Palembang Rivers and Banks.*

The Wycombe, after having rounded Vierde Point, 2 or 2½ miles distant, in 10 fathoms, continued in that depth, but the lead-line getting foul, she touched the ground before it was cleared, the extreme points of Sumatra bearing W. ½ S. and E.S.E. ¼ E., Vierde Point S.E. b. E, and Monopin Hill North, being about 2 miles from the shore. A little inside of the vessel there were only 9, 6, and 3 feet water, and the whole of the bank towards the shore and Vierde Point was barely covered at low water; half a cable's length outside they had 9 fathoms. *Vierde Point Pnt.*

In July 1846, the Dutch ship Fanny, from Batavia to Japan, grounded suddenly in 3 fathoms, having had previously 13, 12, and 11 fathoms, muddy bottom; when aground Monopin Hill bore N. $\frac{1}{8}$ W., and Vierde Point S.E. An anchor was laid out at a quarter of a cable's length outside of her in 9 fathoms, and the cable hove taut, and as the flood made she floated off.

This part of the Sumatra bank consists of hard sand, covered with a thin layer of black mud. The Stafford also struck hereabouts, having Vierde Point S.E. b. E., the western land of Banca N. b. W., and Monopin Hill North; at three boats' lengths outside there were 7 fathoms.

There being to the westward of Vierde Point 7 to 8 fathoms on the steep edge of the flat, and 11 fathoms very close to it, it should not be approached to less than 11 or 10 fathoms, taking care to sound continually, and to guard against the indraught of the Palembang rivers; for the flood runs very far up during the eastern monsoon, and during the western one the ebb sets very strongly towards the dangers on the Banca side. To avoid the flat by day Vierde Point should never be brought to the eastward of S.E. b. S., or S.E. $\frac{1}{2}$ S., nor be approached within 3 miles.

Sand Banks.

565. In this part of the strait there are some sand-banks, with depths of 6 or 7 fathoms. From one of them, with 7 fathoms, Cape Kalian lies N. $\frac{1}{2}$ E., about 6 miles; from another, with 9 fathoms, Monopin Hill bears N. b. W. $\frac{1}{2}$ W., and from Vierde Point S. b. W.; and from a third bank with 7 fathoms, Monopin bears N. b. W. $\frac{3}{4}$ W.; and Vierde Point S.W. $\frac{1}{2}$ S. The frigate Zephyr sounded, probably on this bank, in January 1792, in less than 6 fathoms, having Monopin N. b. W. $\frac{1}{2}$ W. and Vierde Point S. W., 3 miles distant. By steering a little more to the northward, it deepens immediately to 12 or 13 fathoms.

Sumatra Rivers.

566. To the westward of Vierde Point the first rivers seen are the Salsee and Oepang; then the Soensang; and lastly the Assing; the last two are navigable for vessels of light draught as far as Palembang.

Soensang River.

567. The channel over the bank into the Soensang river is very shallow, but marked by 8 poles on the W. side, and 4 on the E. side. H.N.M. corvette Boreas, being between the two outer poles, observed Monopin Hill N.E., the E. point of the

Assing river S.W. ½ W., the mouth of the Soensang river S. b. W. ¼ W., and had at high water 3¾ fathoms. The shallowest water is between those two poles, where at present, at low water, in the eastern monsoon, there are but 6 or 7 feet, and at high water, in the western monsoon, 23 feet: farther in, the channel becomes gradually deeper. The natives assert that spring-tides take place about quarter-moon. The tidal streams follow the direction of the channel, but the corvette Boreas observed that in the offing the flood runs to the north-westward, and the ebb to the south-eastward, which are quite in the opposite directions to the tides in the strait and bay off Minto. (See Art. 582.) *Tides.*

568. In entering the Soensang river, keep the western shore aboard till Soensang village is seen to the S.W., and then cross over to avoid the shoal off Pajoeng Island. Having passed this island, it is better to keep a third of the breadth of the river on the eastern side, because on the opposite shore the water is shallow, and by keeping Kramat Island to the westward, the point can be passed close on the port side, the depth being there from 7 to 9 fathoms. From thence it is preferable to cross again to the western shore, and to pass to the westward of Singries Island; but vessels of heavy burden are obliged to use the channel east of Singries; there being between the north point of the island and the left or western bank of the river 3 or 2¾ fathoms water only, at half tide.

As far as the creek of Maroh, keep to the middle and western half of the river till the creek is passed, so as to avoid the shoals on the eastern bank. And afterwards adhere to the middle of the river, but pass to the eastward of the Panjana Islands.

At Oepang steer over to the western shore, as shoals are there in the middle of the river; then return to the middle as far as the shoals off Jarat; when keep a third of its breadth from the western shore up to Bœrong Island, which must be passed to the westward.

From Bœrong pass to the westward of Anjer Island, towards the eastern shore, leaving Semanding Island (from which a shoal projects north) to the westward. The depth here is 4 and 3½ fathoms, but from thence it becomes deeper, and a third of the breadth of the river is the best distance from the eastern

shore. In crossing over to Nama, the shoals of Bœrang and Nama Islands must be avoided, which may be done by keeping a little closer to Bœrang than to Nama.

Nama Shoal. Having passed Bœrang, keep on the western shore to avoid the shoal which projects some distance from Nama Island, and from thence to the river Bladia haul towards the eastern bank, leaving the piles of what was formerly a water

Kembara. battery to the westward. Having passed Kembara Island, the river becomes clear, and the middle of the channel is to be kept as far as the residency at Palembang, where there is good anchorage in 6 or 7 fathoms water upon a yellow mud bottom.

Tides. During the western monsoon the stream of flood at Palembang is scarcely perceptible.

Palembang. 569. The town of Palembang is the capital of the province of that name, and lies in 2° 59′ S., 42 miles from the mouth of the Soensang River.

Assing River. 570. The Assing, or Salt River, offers the best passage to Palembang, being at all times navigable for vessels of the heaviest burden, but the shallow at its entrance often causes a delay of several days.

At the mouth of the Assing, which was surveyed in the beginning of 1846, Monopin Hill bears N.E. b. E., and Assing Point, N.W. b. N. At the entrance of the river, in the middle of the channel, there are 8 to 10 fathoms ; and close to the poles at the bank on the eastern side of the channel from 4 to 5 fathoms. Higher up this river the Pontian and Jarat channels are just as good as that through the Soensang.

To enter the Assing, bring Monopin N.E. b. E., and Assing Point N.W. b. N., then steer in a S.W. direction, according to the state of the tide, for the ebb runs strongly over the very shallow outer bank towards Soensang, and the flood towards the inner banks.

Having reached as far as Apie Point, take the mid-channel, between the beacon-poles, towards Bayam Point, and then, though still following the middle of the river, keep rather towards the Laga Point side, round which the Pontian Channel is entered. With a flood tide keep on the eastern shore, as the stream runs with force past that channel ; taking care, at the same time, to avoid the shoals which surround the point.

In this river we have only to mind the points, as from most of them project small mud banks.

571. The junction of the rivers Pontian, Kietjar, Gassing, and Sebalick, which last unites the Pontian to the Jarat, causes a part of the ebb to run from the first two rivers through the Sebalick, and compels vessels having come so far with the flood to anchor and to wait for the ebb. The Pontian is generally deepest on its western side, except near its mouth, where the greatest depth is in the middle; but again deepens towards the western side, higher up, and in front of the shoal off the point, between the Kietjar and the Sebalick. When near its junction with the Sleino and Jarat rivers, keep close to the eastern shore, in 6 to 8 fathoms to avoid the reef which projects from the point between the Sebalick and Jarat. When there is no wind, it is necessary to anchor and wait for the flood coming up by the Sleino, in order to proceed up the Jarat, and it will be found that a great part of the flood goes into the Tambangadin River, while that going up the Jarat is very trifling. Having reached the Ketchil Jarat, anchor again till high water, to wait for the ebb from this river which will soon take the vessel into the Soensang. *Pontian and other affluents.*

The bank off the Jarat is very shallow, but on the N. side there is a narrow passage with 5 or 6 fathoms. Vessels of less draught than 15 feet can also find a passage on the south side. *Jarat Bank.*

The difficulties in going up the Assing, caused by the narrowness of the rivers Pontian, Sebalick, and Jarat, and the necessity of stopping so often to wait for the tide, are amply compensated by the advantage that vessels of even the greatest burden suffer no delay at its mouth. *Assing, always navigable.*

572. Vessels navigating these rivers, especially during the western monsoon, should be aware that the heavy rains in the interior cause such strong freshes to run out of the river, as to reach towards the opposite shore; and that in the spring, especially during the eastern monsoon, very powerful floods pour into the rivers. High up the rivers are seen ripplings like breakers, caused by these tides and freshes, which frequently bring down large detached masses of grass and brushwood like floating islands. *Freshes.*

573. The Goenong Manoembing, or Monopin Hill, lies near *Monopin Hill.*

the western end of Banca in 2° 1′ S., and 105° 14′ E., or 1° 38′ W. of Batavia.* At the southern foot of this hill lies Minto, the capital of the island, having a fort upon a hill, and stores close to the shore, the red roofs of which are visible at a considerable distance.

Monopin Hill, Position.

* The position of the Monopin is laid down from the following observations:—

		°	′	″		°	′	″	
Horsburgh	. .	2	0	0	S.,	105	14	0	E.
Vaillant	1792,	2	1	0	„	.	.		
Robinson	1819,	2	1	40	„	.	.		
Lieut. Schröder	1824,	2	0	0	„	105	12	40	„
H.N.M. corvette Boreas	1838,	2	1	35	„	105	14	0	„
„ brig Vliegende Visch	1839,	.	.			105	14	9	„
Lieut. Keuchenius	1839,	2	1	20	„	.	.		
H.N.M. corvette Nehalennia	1840,	2	1	35	„	105	11	40	„
„ „ Hippomenes	1840,	.	.			105	15	0	„
„ frigate Rotterdam	1841,	2	0	0	„	105	15	8	„
„ steamer Phœnix	1841,	.	.			105	13	48	„
„ brig Windhond	1843,	2	1	23	„	.	.		
„ frigate Palembang	1844,	.	.			105	12	31	„
„ steamer Merapie	1846,	.	.			105	15	30	„
Mean		2	0	57	„	105	13	50	„

It frequently happens at the north entrance of Banca Strait, that Monopin Hill is the only visible object, especially when near Sumatra in 5 or 6 fathoms. I therefore ascertained its height trigonometrically to be 493 Dutch ells, or 1617 English feet; from which the following table has been computed for finding its distance. Rule: Measure the vertical angle between its summit and the horizon, on both sides of the zero point of the sextant, and subtract from the mean angle the dip of the horizon for the height of the eye. Find this corrected angular altitude in the table, and the corresponding miles in the next column will be the required distance.

Its angular heights converted into distances.

Angular Altitude.	Distance in Miles.	Angular Altitude.	Distance in Miles.	Angular Altitude.	Distance in Miles.
° ′		° ′		° ′	
3 47·2	4	1 19·0	11	0 43·4	18
3 21·6	4½	1 15·1	11½	0 41·8	18½
3 1·2	5	1 11·5	12	0 40·2	19
2 44·4	5½	1 8·3	12½	0 38·7	19½
2 30·4	6	1 5·3	13	0 37·3	20
2 18·5	6½	1 2·5	13½	0 36·0	20½
2 8·2	7	0 59·8	14	0 34·7	21
1 59·2	7½	0 57·3	14½	0 33·4	21½
1 51·4	8	0 54·9	15	0 32·2	22
1 44·5	8½	0 52·7	15½	0 31·1	22½
1 38·3	9	0 50·6	16	0 30·0	23
1 32·8	9½	0 48·7	16½	0 28·9	23½
1 27·7	10	0 46·9	17	0 27·8	24
1 23·2	10½	0 45·1	17½		

Cape Kalian, 2 miles to the westward of Minto, bears S.W. b. S. 5 miles from Monopin Hill, and about W. b. N. from Pouni Point. *Cape Kalian.*

The bank which surrounds the coast of Banca, and which projects south of Pouni Point as much as 2 miles, consisting of mud and rocks, is very shallow and steep-to; between that point and the Brum Reef there are 7 fathoms, and S. and S.W. of Pouni Point, from 10 to 17 fathoms; outside of which the bank again rises at its edge, there being only 2 to 3 fathoms; but by keeping Pouni Point E. b. S. the shore may be approached as close as 6 fathoms. *Pouni Flat.*

574. The Brum Reef is an extensive patch of black rocks and sand, and becomes for the most part dry; it lies 4 miles from the shore of Banca, and from its centre Monopin bears N.W. $\frac{1}{2}$ N. These rocks extend E. and W., and are 2 miles long and a mile wide. Between the reef and the shoals near the shore there is a passage of 2 miles wide, in the middle of which there are 12 to 14 fathoms, decreasing to 8 and 7 fathoms towards the inner edge of the reef, but close to its outer edge there are depths varying from 9 to 21 fathoms. *Brum Reef.*

575. The Amelia Rock, with $3\frac{1}{4}$ fathoms on it, lies 3 or 4 miles to the westward of the Brum Reef, from which it is separated by a channel 10 or 12 fathoms deep. The Walmer Castle struck upon this rock, and the Princess Amelia also, having Monopin Hill N. b. W. $\frac{3}{4}$ W., and Brum Reef E. $\frac{1}{4}$ N. *Amelia Rock.*

The Bridgewater grounded on it, with Monopin N. b. W. $\frac{3}{4}$ W., Brum Reef E. b. N. nearly, and the extremities of Banca N.W. $\frac{1}{2}$ N. and E.N.E. She had at the port side 19 feet water, the depth increasing towards the S.S.E., in which direction she was warped off. Close to the rock she found from 7 to 10 fathoms.

576. The Hodie is also a very extensive reef of sand and rocks, and the greatest part dries. From the E. point of this reef Cape Kalian bears N.E. $\frac{3}{4}$ E., and from its western extremity Oelar and Bersiap Points are in a line; the reef extends 3 miles N.W. b. W. and S.E. b. E., and is about half a mile wide. *Hodie Reef.*

577. Between this reef and the Amelia Rock lies Minto Bank, which consists chiefly of hard sand, but its only dangers are from a few spots of 3 fathoms, from which Monopin Hill *Minto Bank.*

bears between N. b. E. $\frac{1}{4}$ E. and N.E. b. N., and some others (one of which has only $2\frac{3}{4}$ fathoms) with that hill about N. $\frac{1}{4}$ W. On the inside as well as on the outside of this long bank the bottom is soft and muddy; on the N. side the depth increasing first to 20 fathoms, and then shoaling to 6 or 5 fathoms at a mile from the shore.

Hodie Pass. Between this bank and the Hodie Reef there is a clear channel in the direction of Cape Kalian bearing N.E. $\frac{1}{2}$ E., but it is only 4 or 5 cables' lengths wide.

Binnen Bank. 578. The south edge of another narrow shoal, called the Binnen Bank, stretches due E. from Cape Kalian; it carries from 1 to 3 fathoms, and inside of it to the northward, small vessels will find anchorage.

Brum Channel. Notwithstanding that the channel between the Brum Reef and Banca is only 2 miles wide, a vessel may easily work through it by day, during the western monsoon, because she can take advantage of the tides; but on the coast of Sumatra, a strong easterly current runs with little interruption; but she must be very careful in crossing over to the coast of Banca, as the bank is very steep, and she might suddenly fall from 7 to 3 fathoms before there would be time for a second cast of the lead.

Minto Bay. 579. Having reached as far to the westward as Pouni Flat, which projects for some distance, Cape Tada must not be brought more to the eastward than E.N.E. $\frac{1}{4}$ E. before Monopin bears N.W. $\frac{3}{4}$ N. or N.W. b. N. To enter the road of Minto from the eastward, work between the shore and the Minto bank. A hard sandy bottom and shoal water will show when near the edge of the latter bank, while, to avoid the shallow along the coast, Monopin must not be brought more to the westward than N.W. b. N., and taking care to be in not less than 5 fathoms.

Having passed between the Brum Reef and Banca, if it is not intended to anchor in Minto Bay, proceed towards Sumatra between the Amelia and the Brum, taking care, in order to avoid the former, not to bring Monopin more to the northward than N.N.W. before Brum Rocks bear E.N.E. $\frac{1}{2}$ E.

Approach to Minto. 580. The usual way to the bay of Minto is across the Minto bank, between the Hodie Reef and Amelia Rock. For this purpose bring Monopin between N. b. E. $\frac{3}{4}$ E. and North,

before being near the bank; with the hill in that direction, you will cross the bank in not less than 6 fathoms, and will then deepen to 18 or 20 fathoms, soft muddy bottom; it afterwards shoals regularly to 5 and 6 fathoms, in which depth a vessel may anchor with Monopin N. b. E., the flagstaff of the fort N. $\frac{1}{4}$ W., and Cape Kalian W. or W. $\frac{1}{4}$ S.

She may also anchor more to the eastward; but with Monopin to the eastward of N. b. E. she would be too near the Binnen Bank, unless there may be some good reason for lying farther from the coast, which, however, makes the communication therewith very difficult.

Kalian Pass.

Coming from the northward towards Minto Bay, the channel inside of the Hodie Reef, called Kalian Pass, is generally taken; and, although only a mile wide, yet with a fair wind it is preferable; but the great depth, bad anchorage, and strong currents, render it unadvisable to attempt to beat through this pass. To run through it, bring Monopin E.N.E., which bearing will lead between the Hodie Reef and the Hendrik Reefs, and when in the pass keeping a little closer to Banca, but not in less than 9 or 8 fathoms.

Kalian Ledge.

581. Just to the northward of Cape Kalian a small ledge, with 3 to 5 fathoms water, lies parallel to the shore, and at a cable's length from it. Cape Kalian is steep-to, and may be approached to half a cable's length; but when the ledge is passed it is necessary, in order to avoid the Binnen Bank, to keep the cape to the northward of W. till Monopin bears N. b. E.

Landing.

At low water, landing is often very difficult, for the boats must be dragged some distance up the strand, on account of the surf, which is very heavy upon this gradually shelving shore.

Tides at Minto.

582. During the western monsoon in Minto Bay, it is high water in the morning, and during the eastern monsoon in the afternoon, or rather at new and full moon at 8 h. 3 m.; but the tide is so irregular that no calculation can be made for any other days. The average range of the tide is about 7 feet.

Oelar Reef.

583. From Cape Kalian the shore trends N. b. W. $\frac{3}{4}$ W. towards Bersiap Point, the western extremity of Banca, and from thence N. b. E. towards Oelar Point; between these two points the Oelar Reef projects some distance from the shore, in the middle of which there is a rock above water; and on the outside of the reef there are 8 to 10 fathoms water.

This reef, on which the sea occasionally breaks, seems to be the same which, in 1786, the Charlotte examined and thought it to be the Hendrik Rocks. Her boat had 9 feet, with Monopin E.S.E., the southernmost visible land of Banca S. b. E. $\frac{3}{4}$ E.; the northernmost land N.E. $\frac{3}{4}$ E. nearly, and a round rock near the shore E.S.E. $\frac{1}{2}$ E. It projects most in a W.N.W. direction from the Monopin.

Hendrik Reefs. 584. The Hendrik shoal seems to consist of a group of conical rocks, lying about midway between Banca and Sumatra, and leaving a passage between them and the reef last mentioned of 5 miles in breadth. Capt. W. Mabbot, of the Cæsar, anchored in Dec. 1725, in 16 fathoms, with the high land of Monopin E.S.E. and Batacarang Point S.S.W. Shortly after, swinging into 10 fathoms, he sent a boat to sound, and found the Hendrik Rocks to be at half a cable's length from the vessel, and carrying only $2\frac{3}{4}$ fathoms water.

Capt. W. Smith, of the Houghton, says that he observed, in February 1758, the Hendrik Rocks at 4 miles distant, having a small black point above water, and when in a line with Monopin Hill, E.S.E. Although it was rough weather, yet he could not distinguish any breakers on them.

The Nonsuch, in July 1789, after having sounded on the edge of the bank, in 5 fathoms, steered E. $\frac{1}{2}$ S. till in 12 fathoms, when she tacked in 11 fathoms, and immediately grounded; having Monopin E. b. S. southerly, and being 9 or 10 miles from the shore of Banca, and about 12 from Sumatra. She had 5 fathoms abaft, and $1\frac{1}{2}$ under the bows. At high water they got her off, and it was thought to be one of the Hendrik Rocks on which she had struck. More to the northward, but on the same side of the channel, they had previously found a varying depth of $7\frac{1}{2}$ to 12 fathoms, hard bottom.

A Portuguese vessel, when aground, had the west point of Banca E.S.E., and a point on Sumatra W. $\frac{1}{2}$ N.

Capt. Waterman, of the Volunteer, in 1813, wished to examine these rocks, and pulled towards a place where he saw light coloured water, but a strong S. current carried him away from it. At the southern extremity of the group he had 3 fathoms, hard bottom, with Monopin E. b. S., the high trees near Batacarang Point W. $\frac{3}{4}$ S., and Cape Kalian S.E. b. E.

nearly: at a ship's length to the southward it deepened to 17 fathoms. Lieut J. J. Schröder, in his chart of the N.W. coast of Banca, places these rocks W. $\frac{3}{4}$ N. from Monopin, and 7 miles from Bersiap Point (on that chart called Tandjong Oelar); to the southward of them he had 12 to 16 fathoms, and on the N. and E. sides 17 to 19 fathoms. A mile N. from them he discovered another danger with 13 fathoms round it. Lieut. Keuchenius, passing there in 1839, found these bearings to be correct.

To avoid the Hendrik Rocks, vessels taking the channel between them and Sumatra should keep in $4\frac{1}{2}$ to 7 fathoms on the edge of the bank off Batacarang Point, and not keep more to the eastward than in 9 or 10 fathoms, while Monopin Hill bears between E. and E.S.E. To pass to the eastward of them keep Mount Peniabang, which, as well as the Mounts Paripari and Jerangkat, appears like an island, N.E. or N.E. $\frac{1}{4}$ N., which will lead between the Hendrik Rocks and Oelar Reef. When Monopin bears E. $\frac{1}{2}$ S. Peniabang must not be more to the eastward than N.E.; and when the former is E.S.E. the latter must not be more N. than N.E. $\frac{1}{4}$ N., so as to avoid in the first case the Hendrik Rocks, and in the second Oelar Reef.

585. Batacarang Point may be known by a group of high trees, which gives it a jagged appearance; it bears W. from Monopin Hill, and is bordered by a mud bank, which may be safely approached to 5 or $4\frac{1}{2}$ fathoms. *Batacarang Point.*

586. Vessels having passed Vierde Point at 3 or 4 miles distance, in 11 or 12 fathoms, but not less than 10, should steer N.W. b. W. towards Batacarang Point, carefully attending to the flood tide, into the Palembang rivers.

The banks at the entrance of those rivers should not be approached to less than 9 fathoms, and not more than 14 fathoms. The best way at night is to keep the middle of the passage, but rather inclining towards the Sumatra coast. Vessels steering N.W. b. W., towards Batacarang Point, will increase the depth to the S.W. of Cape Kalian probably to 15 or 16 fathoms, and afterwards lessen it towards Batacarang Point. Before Monopin bears east, a depth of 8 or 9 fathoms must be attained towards Sumatra, and when this

hill bears E. b. S. or E.S.E. they should be in 6 or 7 fathoms.

In working through the strait the Hendrik Rocks must not be approached nearer than 9 fathoms, but the bank of Batacarang Point may be neared to 5 or 4½ fathoms. The channel between them is 5 miles wide, and when Monopin Hill bears S.E. b. E. ½ E. the vessel will be to the northward of the Hendrik Rocks.

CHAPTER III.

North Shore of Banca and Banca Strait, from the Northward.

587. From Batacarang Point the coast of Sumatra trends about N.N.W. towards Jaboeng Point, sometimes known as Cape Bon,* which lies, according to the observations of Capt. J. P. Machielsen, in 0° 56′ 15″ S. and 104° 24′ 45″ E. The entire coast, which is covered with wood, very low, and entirely unknown, is bordered by a mud bank, that may be approached to 6 or 5 fathoms water, except off Jaboeng Point, close to which there are in some places 9 fathoms, but all vessels should keep 3 miles from it. *Jaboeng Point.*

588. Varella Island is of a middling height, but it has a hill on its W. side, which is visible 7 or 8 leagues; it lies N. by E. ½ E., between 9 and 10 miles from Jaboeng Point. Close to its S. and E. sides are a few small islands and rocks, the largest of which, called Anak, is separated by a narrow passage with 7 to 9 fathoms, from Varella; and a mile N.N.E. of the former there is a dangerous rock surrounded by 17 to 19 fathoms. Three miles farther a large patch of rocks is laid down in the chart; and again, at 7 miles N.E. b. N. from Anak, the Pollux Rock is said to have but 3 feet on it. On the S.W. side of Varella vessels in want of water may anchor; but precaution must be taken against a surprise by pirates, who, hiding themselves there, have often killed the boats' crews. The passage between these islands and Jaboeng Point is clear, and is often chosen by vessels bound to Singapore during the N.W. monsoon, as they can work up more easily under Sumatra than round Linga. *Varella Island.* *Pollux Rock.*

* See Chart of Channels between Sumatra and Linga, Sinkep, &c.

Taya Island.

589. Taya Island lies in 0° 45′ 30″ S. and 104° 58′ 30″ E.;* it is from 600 to 700 feet high, and in clear weather visible 11 or 12 leagues. Near its N.E. side are two smaller islands. It may be passed at $1\frac{1}{2}$ to 2 miles distance at night; when a great many fires are sometimes visible on the shore, made by turtle-fishers, from the neighbouring islands.

Smith Bank.

590. Smith Bank was discovered by the English vessel Thomas Harrison, Captain E. Smith, from Singapore to Batavia, who placed it in 1° 7′ S.; S. $\frac{1}{2}$ E., 7 or 8 leagues from Taya Island, and W. $\frac{1}{2}$ N. from Toejo Island. He thinks it to be $1\frac{1}{2}$ or 2 miles long, with a depth varying from 5 to $2\frac{3}{4}$ fathoms, on a hard bottom. In old charts a shallow spot was shown, but it has been left out in those of more modern date.

Toejo, or the Seven Islands.

591. At the islands of Toejo, or Seven Islands, and also at Docan and Toty Islands observations were made, in 1845, by H.N.M. brigantine Dolphin. From Joe Island, the southernmost of the group, Monopin Hill bore S. 6° 13′ W.; and from the western part of Sato Island, which lies in 1° 13′ 5″ S., and by chronometric observations 2′ 25″ E. of Monopin, Taya bears N.W. $\frac{3}{4}$ N.

These islands, which are high and woody, are surrounded by rocks and reefs, and uninhabited, and are visible 8 or 9 leagues. They are occasionally visited by proas for fresh water and wood; the water, which is bad and scarce, is procured on the west side of Katjangang Island, where there are a few wells. Between all these islands there are passages, but of an irregular depth, and a hard bottom, and likewise between them and Docan.

Docan Island and Reefs.

592. Docan Island lies 7 leagues from Katjangang, in 0° 59′ 50″ S., and, according to chronometric measurement, 27′ 15″ E. from Monopin. Off its S.S.E. point two separate reefs extend 2 miles from the island, with 2 fathoms water

		° ′ ″	° ′ ″
* The frigate Zephyr - - - - -	1792, in	0 45 30 S.,	104 58 0 E.
Captain D. Ross - - - - - -	1819, „	0 45 40 „	104 59 15 „
H.N.M. corvette Hippomenes - -	1840, „	. . .	105 0 15 „
„ frigate Rotterdam - - -	1841, „	0 46 10 „	104 57 40 „
„ steamer Phœnix - - - -	1843, „	. . .	104 59 45 „
„ brig Windhond - - -	1843, „	0 44 20 „	104 57 0 „
„ steamer Bromo - - - -	1845, „	0 46 30 „	. . .
Mean - - - - - -		0 45 40 „	104 58 39 „

on each, and round them from 14 to 18 fathoms. In January 1823, the Mary, bound from Minto to Singapore, struck on one of them. Docan is surrounded by a reef, and at its extremity there is a small islet.

593. Toty Island, or Poulo Laut, lies in 0° 56′ S. and 34′ 15″ E. of Monopin, by chronometers; it is surrounded by a steep reef, which projects most on its east side—as much as half a mile. The passage between Toty and Docan is 6 miles wide, in a depth of 16 to 20 fathoms. *Toty Island, or Poulo Laut.*

594. The coast of Banca trends north-easterly from Cape Oelar, forming the extensive bay of Sonjie Boolo, or Jebus Bay. Near Bicat (the next point to the northward), a reef projects for nearly 3 miles; but the whole bay is shallow to that distance from the shore. In its N.E. part, the rivers Kampak, after receiving the waters of the Jebus, and the Boolo discharge themselves. From their mouths the shore trends to the north-westward as far as Genting Point, the N.W. point of the bay. In this bay, which is much visited by coasters, there is anchorage in 5 or 6 fathoms on a soft muddy bottom, with Genting Point N. b. E. $\frac{1}{2}$ E., Boolo River E. $\frac{1}{2}$ S., and the watering place, which is about $1\frac{1}{2}$ miles east of Genting Point, N.E. b. E. $\frac{1}{2}$ E.; or in 5 fathoms off the Boolo River, with the village N.E. $\frac{1}{2}$ E., and Genting Point N. b. W. $\frac{3}{4}$ W., 3 miles from the shore. *Sonjie Boolo Bay.*

595. Genting Point, in 1° 42′ 30″ S., lies N.N.E. from Monopin; a reef projects 2 miles from it, having 8 fathoms water close to. Near this point are the three peaks of Paripari, Peniabang, which is steep at the west side, and Jerangkat; these three mountains appear at a great distance like islands, and are mentioned as such in many log-books and old charts. *Genting Point.*

The coast from hence trends to the N.E. as far as Mellalla, the western point of Klabbet Bay, on which point there is a pretty high hill. Along and close to the shore are the islets Pamudsha and Proet, and the rock Guntoer; and 3 miles from the shore the Hyoe and Doyan Rocks; the two latter are not larger than boats, and show but little above water. *Mellalla Point.*

596. The Hyoe is covered with white guano, and lies N.E. b. N. from Mount Peniabang, W. $\frac{1}{4}$ N. from Mount Mellalla, and W.S.W. $\frac{1}{2}$ W. from the Doyan Rock; and the latter lies N.E. $\frac{1}{4}$ N. from Mount Peniabang, W.N.W. $\frac{3}{4}$ W. from *Hyoe and Doyan Rocks.*

Mellalla Point, and W. b. N. from the Guntoer Rock. Close to the northward of these rocks the depths are very irregular, varying from 17 to 27 fathoms; and between them and the shore there are from 7 to 13 fathoms, rocky bottom. By keeping 4 miles off Banca all these dangers are avoided.

Klabbet Bay. 597. Klabbet Bay runs up into Banca about 9 leagues in a S.E. direction, but being encumbered with many rocks and shoals, there is only a narrow passage left, with 4 or 5 fathoms water, by which vessels of heavy burden proceed as far as the mouth of the Layang river. Over the inner end of the bay hangs the highest of the Banca mountains, called Marass, or Maradi; the highest of them stands in 1° 51′ S. and 105° 54′ E. By its two peaks it is easily recognized, and Lieut. Baron P. Melvill, D.R.N., ascertained its elevation to be about 2,320 feet.

Tin exported. Vessels coming here for cargoes of tin, usually anchor outside the bay, between its E. point and the Trassie Reef, in 9½ or 10 fathoms, soft muddy bottom, having Penyusa Islet in one with Mount Marass S.S.E. ½ E., Mount Klabbet S.S.W. ¼ W., Mellalla Point W.S.W. ¾ W., and Menkudo Island E. ¾ N.

Trassie Rock. 598. Trassie Rock has 2 fathoms water on it, and 10 and 11 fathoms round it. When on the rock, the W. point of Penyusa Islet is in one with the hill near Monkober Point S.S.E., Menkudo Island E., and Mellalla Hill S.W. b. W. ¼ W.

H.N.M. schooner Dolphin, in May 1846, anchored off Klabbet Bay, and, examining it in a boat, found the soundings were from 11 to 9, 4, and 3 fathoms, rocky bottom; the W. point of Penyusa Islet, near Tadá Point, in one with the western peak of Mount Marass bore S.S.E.; from Penyusa Islet Siangou Point bore S. 71° W.; Trintang Point S. 36° 20′ E.; and Tadá Point S. 85° 10′ E. On the reef, which is of small extent, were found to be not less than 3 fathoms, and 11 to 12 round it.

Cape Krassak, the North Point of Banca. 599. Menkudo Island lies near Krassak Point, the northernmost of Banca, in about 1° 29′ S. Between it and Klabbet Bay there is a 2-fathoms reef 2 miles from the shore, with Menkudo Island East, and Mount Chundong S.E. ½ S.

Between the north coast of Banca and the islands of Tocjo, Docan, and Toty, the general depth is from 14 to 17 fathoms, but more to the eastward it increases to 20 fathoms.

600. From October to March, during the N.W. monsoon, the currents run with force to the S.E., and during the other months to the N.W. It has, however, occurred that vessels going to Banca in June and July have experienced strong southerly currents. *Currents.*

601. Along the north shore of Banca, in regular weather, there are generally two ebbs and two floods in the 24 hours. *Tides.*

602. Vessels bound to the Strait of Rhio, or Singapore, having passed the Hendrik Rocks, should steer for Taya Island, and pass close to its east side, being careful to avoid Smith Bank (Art. 590), which lies S. ½ E., 7 or 8 leagues from Taya; but during the N.W. monsoon it would be better to keep between 4½ and 7 fathoms under the lee of Sumatra, as far as Jaboeng Point, which must not be approached nearer than 3 miles: then inside of Varella, and along the shore of Sumatra, because the anchorage is better, the currents weaker, and deeper water than to the eastward of Linga. *Vessels bound to Singapore;*

603. Vessels bound to China generally pass between Taya and Toejo Islands, but it would be as well to go to the eastward of the latter group. When passing at night, or in thick weather, between the Toejo Islands and Sumatra, the lead will be very useful in detecting the drift caused by cross currents, for the depth decreases generally towards Sumatra, and increases towards those islands; but care should be taken at night in approaching them, as the remarkable irregularities of the currents have brought many vessels into the danger of being entangled among them. Near Sumatra a mud bottom mixed with sand prevails, and near the island mud only. *or to China;*

When passing between Banca and the Toejos they should not be approached to less than 10 fathoms, nor Banca nearer than 4 miles, for its dangers are all 2 or 3 miles in the offing, and close to the surface of the sea. Near Hyoe and Doyan Rocks the bottom is rocky, and the depths are irregular. *or to the Eastward;*

604. Vessels keeping to the southward of Toty and Docan Islands, in order to cross over to Borneo, must take care to avoid the 2-fathom reefs S.S.E. 2 miles from Docan Island, and also the Vega Bank, which shall be described hereafter. *or to Borneo.*

605. Vessels from the northward, bound through Banca Strait, should keep close to the Sumatra coast in 4½ to 7 fathoms, before Monopin Hill bears S.E. b. E. ½ E., and retain- *Entering the Strait from the Northward.*

ing that depth, pass to the westward of the Hendrik Rocks, to the southward of which they will be when Monopin Hill bears east; if working through, they should not stand into a greater depth than 10 fathoms while the Monopin bears between S.E. b. E. $\frac{1}{2}$ E. and E.

Hendrik Rocks. Having passed the Hendrik Rocks, keep in the middle of the strait, as the flood tide sets towards the banks along the coast of Sumatra, and the ebb towards the dangers on the other or Banca shore.

Vierde Point. From Batacarang Point the depth increases, and it is best to keep in 10 to 12 fathoms when passing the mouths of the rivers of Palembang and Vierde Point, where the bank is steep having 8 fathoms on its edge, and 11 a little way from it. That point must not be brought more to the eastward than

Derde Point. S.E. b. S., or S.E. $\frac{1}{2}$ S.; and from thence to Derde Point it is necessary to keep 3 miles from the shore. The best depth is between 10 and 14 fathoms, but this must not be exceeded, in order to avoid the dangers on the coast of Banca.

Having passed Derde Point, steer to the eastward till near the Nangka Islands, on account of the bank which projects so far between Derde and Tweede Points; then steer towards

Tweede Point. Tweede Point, in 16 to 20 fathoms, and pass 2 miles from it, but in not less than 10 fathoms, nor more towards the shore of Banca than two-thirds of the breadth of the strait, in order to avoid the Timbaga Rocks. In working through, the bank between Derde and Tweede Points may be approached to 7 or 6 fathoms, but take care to keep the lead going. Steer now in the middle of the strait towards Eerste Point, in 12 to 18 fathoms, but not approaching the shore of Sumatra nearer than 3 miles, nor Lalarie Point nearer than 2 miles, as the depth there suddenly decreases from 16 to 5 and 3 fathoms. Working through during the eastern monsoon, it is advisable to make short tacks between Tweede and False Eerste Points, as the bank may be approached there as near as 7 fathoms or less, and being there out of the influence of the currents, as well perhaps as of finding an eddy.

Eerste Point. Eerste Point must be rounded at a distance of 2 to $2\frac{1}{2}$ miles, in 10 to 12 fathoms, but not in less, nor farther off than 3 miles; and in case Lucipará is visible, it must not be brought between S.S.E. $\frac{1}{2}$ E. and S.S.E. $\frac{3}{4}$ E. before First Point bears

N.W. b. W. ½ W., to avoid the Merapie Bank, upon which there are not more than 2¾ fathoms, and probably less; but at the same time this island must not be brought more to the southward than S. b. E. ½ E., in order not to approach too near the Hindostan Bank. *Merapie Bank.* *Hindostan Bank.*

Eerste Point should now be brought in one with Lalarie Point, but not to the northward of N.N.W. till Lucipará bears S.E. ½ E., when the projecting point of the Sumatra Bank will be passed, upon which many vessels have struck; Eerste Point must then be brought in a line with the western extremity of Parmasang Hill, N. b. W. ½ W., before Lucipará bears S.E. ¾ E. When this island comes to E.S.E., steer midway between it and Sumatra; but the greatest depth is on the eastern side of the pass, as Lucipará may be approached there to 2 miles, but on its south side not nearer than 3 miles, on account of its extensive reef. If when N.W. of Lucipará the bottom is hard, the coast of Sumatra must be approached till the lead indicates a soft bottom, and in working through the narrow pass keep Lucipará between S. ½ W. and S. b. W.* *Lucipará Passage.*

When Lucipará bears N. b. W. ½ W., 14 or 15 miles, the depth increases to 6 and 6½ fathoms, and S. b. E. or S.S.E. may be steered towards the Northwatcher, taking care not to approach the banks of Sumatra in less than 9 fathoms. During the S.E. monsoon it is advisable to reach the meridian of Batavia as soon as possible, as the currents off the south shore of Banca are much weaker than they are more to the southward. A southerly course should not be taken before S. b. E. can be kept, unless the coast of Banca is approached too near, because it would be necessary afterwards to keep to the eastward to avoid the banks near the coast of Sumatra, where strong currents would be found. *Currents S. of Banca.*

H.N.M. brig Windhond left Lucipará Pass on the 22nd September 1844, at midnight, and steered E.S.E. till the noon of the 24th, when she reached the meridian of Batavia, and was found to have been set not more than 7′ W., and nothing N. or S. She passed to the northward of the Northwatcher, and on the 25th saw Krawang Point bearing east, notwithstand-

* More explicit directions for proceeding through the Lucipará Pass have been already given in Articles 531—535.

ing the strong westerly currents experienced while crossing Macclesfield Channel. Many seamen who have often made this passage declare that it is performed in a much shorter time by following the above route, than by keeping S. or S. $\frac{1}{2}$ E., which not only produces delay, but leads too near the dangers on the coast of Sumatra.

Course to Batavia.

606. In the eastern monsoon, when going from the strait to Batavia, the route along the south shore of Banca is very advantageous, from its being so far to windward.

Course to the Strait of Sunda.

607. Vessels bound to the Strait of Sunda would naturally steer S.S.E. or S. b. E., keeping in from 9 to 13 fathoms; but the currents are too variable to trust implicitly to that course, and the depths also are too irregular to depend upon them alone, for the 5 and $4\frac{1}{2}$ fathoms banks of the Boreas and Arend may be easily mistaken for those S.E. of Tree Island, which are very dangerous. It is therefore advisable in day-time to keep on the Sumatra side in 8 or 9 fathoms, from which depth that shore is generally visible from the deck, and at night to keep off shore when the water shoals to less than 9 fathoms, and to approach it when in more than 13 fathoms, as that depth with westerly winds would be too far off. (See Art. 531.)

Two Brothers.

When arrived in about 4° 40′ S., or at 10 or 11 leagues from the Two Brothers, keep as nearly as possible in 9 or 10 fathoms, so as to get sight of these islands bearing south; otherwise, if made when in 11 fathoms, it would be difficult to weather them with a westerly wind, especially as the current runs to the S.E. during the western monsoon. When passing to the eastward of the Two Brothers a good offing ought to be kept from the Brouwer Reefs, which lie N.E. b. E. $\frac{3}{4}$ E. from the Two Brothers.

On coming from the northward, the Two Brothers appear like one island, and hence some vessels have been led into danger by mistaking Mount Imbong, or Knobbel Hill, in Sumatra, when seen in the twilight, for the Two Brothers. If sailing at night past these islands, their position should be well ascertained before dark, or else it would be better to anchor.

Minto Road.

608. Vessels from the northward, bound to Minto, may go to the eastward of the Hendrik Rocks, (which, however, is only advisable with a fair wind, for during the western monsoon the coast of Sumatra is much safer, affords better

anchorage, and the currents are less strong,) keeping Mount Peniabang N.E. till Monopin Hill is observed to the eastward of E.S.E., and afterwards N.E. $\frac{1}{4}$ N., so as to give the Hendrik Rocks a wide berth. They may then pass between Cape Kalian and the Hodie Reefs, but Banca must not be approached into less than 9 fathoms, rounding Cape Kalian at a whole or a half cable's length, and then keeping to the northward of west till Monopin bears N. b. E., in order to avoid the Binnen Bank.

On leaving Minto Road, to proceed to the southward, keep Monopin Hill between N. and N. b. E. $\frac{3}{4}$ E., till the soundings show that Minto Bank is passed, when a S.S.E. course may be held, and the shore of Sumatra approached as near as 4 miles; after which the former directions are to be followed.

CHAPTER IV.

Gaspar Strait and the N.E. Shores of Banca.

Gaspar Strait.

609. The Strait of Gaspar,* between the large islands of Banca and Billiton, derives its name, as we are informed by Horsburgh, from the Spanish captain who passed through it in 1724, though Captain Hurle had previously done so when returning from China, in the Macclesfield Galley, in March 1702. Many small islands divide the strait into three principal branches, having the names of Macclesfield, Clements, and Stolze Channels. The first, through which the Macclesfield passed, is formed by Lepar and Leat Islands. The second is named after Captain Clements, who commanded a fleet of English India ships in 1781, and who, on returning from China, chose the passage formed by Leat, Barn, and Saddle Islands to the westward, and North and South Islands to the eastward. The third, Stolze Channel, is bounded by Table Island on the west side, and Mendanau, or Long Island, on the east side, and is so named after the Dutch naval officer, J. Stolze, who was deputed to ascertain the positions of the islands on the west coast of Billiton.

Many seamen prefer this strait to that of Banca, especially in returning from China late in the monsoon, because the course is shorter, the water deeper, and the winds more regular than in the Lucipará Pass; but there are many dangers which render its navigation difficult. Macclesfield Channel is generally taken, although Stolze Channel is safer, and Clements Channel is very narrow, besides its dangers. Entrance Point, the S.E. extremity of Lepar Island, at the southern entrance of Macclesfield Channel, lies in 3° 2′ S., and 106° 56′ 15″ E., or 42′ 15″ E. of Lucipará,† and N. b. E. $\frac{3}{4}$ E. from the Two Brothers.

Entrance Point.

* See Chart of Gaspar Strait.

† This is according to the observations made by Captain D. Ross, in the H.E.I. Company's surveying vessel, and his position agrees with that of the Fairlie Rock, as compared with Edam Island.

610. Vessels, during the southern monsoon, proceeding to the Macclesfield Channel, should pass close to the eastward of the Two Brothers, and steer N. b. E. ½ E. or N.N.E., keeping a good distance from the Brouwer Reefs. The depths in this track are pretty regular from 10 to 15 fathoms, soft bottom; but in the vicinity of the south end of Banca there being some banks of 4½ to 5 fathoms, with 14 to 20 fathoms round them, it is advisable not to approach that coast nearer than 14 miles. *Macclesfield Channel.*

611. A bank in 3° 19′ S., with 4½ fathoms water, lies S. from a remarkable hummock in Banca; and there are two other banks of 5 fathoms, from which a hummock upon the long low point of Baginda, bears N.N.W. ½ W. To avoid these banks the low land which unites the hills of Banca must be kept from a vessel's deck, below the horizon, till Entrance Point bears N. b. E., when you may steer towards the strait; but not allowing this point to be brought more to the eastward than N. b. E. or N. ½ E. *Dangers south of Banca.*

612. The George, or 2½-fathoms Bank, discovered by Capt. D. Ross, lies directly in the track of vessels bound to Macclesfield Channel. The Royal George, in March 1813, on passing out of the strait, and steering S.W. b. W., had come into 5½ fathoms, at which time Entrance Point bore N. b. W., Klippige Point N. ½ W., and the west point of Leat Island N. b. E. ¾ E. The most dangerous part of this bank, carrying only 2½ and 3 fathoms water, lies 6½ miles S. from Entrance Point. By keeping the high trees near Klippige Point open to the eastward of Entrance Point there will be no danger of getting on this bank. *George or Two-and-a-half fathoms Bank.*

613. The Fairlie Rock is the southernmost danger when entering Macclesfield Channel, and lies S. b. E. ½ E. 26 miles from Entrance Point. The East India Company's ship Fairlie grounded on this coral reef on April 21, 1813, at one A.M. It is a cable's length wide, with from 6 to 4 feet on it, and 7 to 16 fathoms round it. At daybreak she anchored in 6½ fathoms, with Embleton Island (Shoal-water Island of Horsburgh) just visible from the deck N.E. b. E., the southern extremity of Banca N. b. W. ½ W., and the rock S.S.W. to S.W. *Fairlie Rock* *Embleton Island.*

On July 5, 1814, Captain D. Ross of the Discovery, examined the Fairlie; at 50 yards from it he had 8, 9, and 12 fathoms, but at three-quarters of a mile S.S.W. only 7½ fathoms

In the vicinity of the rock, on which the sea was breaking, the bottom was soft, and close to it sand. When at anchor with the breakers N.N.E. $\frac{1}{4}$ E., three-quarters of a mile distant, Embleton Island bore N.E. b. E., the latitude of the vessel from the mean of four sextants being 3° 27′ 13″ S., and the longitude by five chronometers varying only a few seconds 107° 2′ 53″, or 9′ 3″ E. of Edam Island.

To avoid this rock, the Island of Embleton must, from the deck of a large vessel, be sunk below the horizon by the time it bears N.E. b. E., this island being the only land distinctly visible from the rock.

614. When leaving Macclesfield Channel in the evening, a S.S.W. course must be kept as soon as the 2½-fathoms, or George Bank is passed, so as to be in the meridian of Entrance Point before the latitude of Embleton Island is reached; and then steer S. b. W. till Entrance Point is at least 10 leagues distant, when there will be a certainty of being to the southward of the Fairlie Rock, if a fair allowance has been made for the currents according to time of the year.

Blas Rock. 615. The Blas Rock was first discovered on September 23, 1839, by the Spanish brig San Joachim, Captain Blas Mateu. Having anchored in 12 fathoms, coarse sand, he took the boat and found three rocks, each about 10 feet in diameter. Upon the northern rock he had 9 feet, on the southern 12 feet, and on the western 17 feet water, and between them passages of 4½ fathoms. Embleton Island bore E. $\frac{1}{4}$ N., the opening between the two hills on Lepar Island N.N.W. $\frac{1}{2}$ W., and the latitude determined by the sun's meridian altitude 3° 20′ 38″ S. The whole extent of the three rocks is about half a cable's length, and round them 12, 13, and 14 fathoms; but there was reason to believe that there were more rocks, because the chain parted while the anchor was being weighed.

Another Spanish captain, M. Aldon, who examined these rocks afterwards, gives them a similar description, and states that the light colour of the water over them was distinctly visible at a considerable distance to the N.N.W. of them. He places them in 3° 21′ S., with Fairlie Rock S.S.E. $\frac{3}{4}$ E., Embleton Island E., and the hills of Lepar Island N.N.W. To avoid this danger Entrance Point must not be brought more to the westward than N. $\frac{1}{2}$ W., when Embleton Island bears E.

616. The Vansittart Shoals are a collection of large rocky patches, which lie about 12 miles E.S.E. from Entrance Point, and which render the entrance of these straits very dangerous, especially in thick weather, as they are not always visible at high water, though the sea breaks upon them at low water. There are nine or ten distinct patches between 3° 4′ and 3° 11′ S. On their south side they are 4 or 4½ miles from W. b. N. to E. b. S., where some of them dry at half ebb. Sandy Island in one with the east point of Leat Island, and the south points of South and Saddle Islands in one, are the marks for their N.E. extremity. To the S. and E. of these shoals the depths vary from 10 to 20 fathoms, and near their western side from 22 to 28 fathoms, decreasing towards the Banca side of the strait, where the bottom consists of coarse sand mixed with broken shells and stones. Previously to giving directions for avoiding these dangers it will be necessary first to describe the adjacent islands. *Vansittart Shoals.*

617. Leat Island lies between 2° 49′ and 2° 55′ S., and rises into many hills, which give it at a distance the appearance of a group of islands. It is surrounded by a reef which likewise incloses the small islet of Jelaka, and many other rocks and banks with deep intervals between them. *Leat Island.* *Jelaka.*

618. The Alceste Rock, upon which H.B.M.S. of that name was wrecked, in February 1817, when returning from China with Lord Amherst and suite, appears to be the outer patch of a coral reef which projects nearly 2 miles from Leat Island, and with only 2 fathoms water on its shallowest part. From bearings said to have been taken at the time she struck, the west side of Gaspar Island bore N. ¾ E., the north point of Leat Island S.E. ½ S. 3 or 4 miles, and Jelaka Islet S. ½ W. According to these bearings the strait would be much narrowed, but the surveys of Captain D. Ross have furnished us with correct information as to the position of this reef. *Alceste Rock.*

It is the same reef upon which, in 1816, the Portuguese vessel Amelia was wrecked, the remains of both her and the Alceste being still visible, with only a few yards between them at the time of his survey, and lying only 1¾ miles from the N.W. point of Leat Island. The position of the wreck of the Alceste is as follows: — the west point of Jelaka in one with the southern sandbank west of Leat, the northern sandbank in one

with a white rock which lies between Jelaka and the N.W. point of Leat, and close to it; and a white rock near the N.W point open to the eastward of a high tree on the centre of the eastern hill of Leat. Near this reef, which is the northernmost danger in the vicinity of Leat, the depth is from 13 to 17 fathoms.

619. To avoid all these dangerous reefs off the N.W. point of Leat, vessels coming from the northward with a N.W. wind and strong S.E. currents, such as are met with in the strait from January to April, ought not to approach Leat nearer than 4 miles before Jelaka bears south, on which bearing it should be kept while running towards the narrow part of the strait; they may then pass the islet at $1\frac{1}{2}$ or 2 miles distance.*

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* In a *Java Courant*, we read that the Dutch schooner Cornelius, of Schiedam, "sailed from Whampoa last year, and on the 9th of April, and at 6 30 P.M., standing into Gaspar Strait, grounded on a sunken rock not laid down on any chart; Gaspar Island bearing N. b. E. $\frac{1}{2}$ E., and the north point of Leat Island S.E. $\frac{1}{2}$ S. In less than fifteen minutes there were 10 feet water in the hold, and the crew were obliged to take to their boats, but were picked up by the English brig Marmion, and carried to Anjer."

(*Nautical Magazine for May* 1851.) There is no doubt that this rock was one of the patches of the Alceste Reef, but its distance from Leat Island cannot be determined by the bearing of such a remote object as Gaspar.

H. O. *Nov.* 1851.

The following account of an American ship having been lost on a reef to the westward of Alceste Rock, appeared in the newspapers shortly after that event.

"On the 14th of September 1851, about 3 A.M., with a bright moonlight, the American ship Memnon, with the small island (Jelaka) off the west end of Leat bearing S., and the northern extremity of Leat E.S.E., tacked to the S.W., and immediately on getting headway struck on a reef not laid down in the charts. On the same day at high water she was hove off uninjured, warped out clear of all danger, and anchored. The next morning in a heavy squall from N.N.W. she dragged her anchors, and the wind shifting to W.N.W., canted the ship round with her broadside to the reef, the island off the west end of Leat then bearing S. by W. There were 7 fathoms forward, $2\frac{1}{2}$ under her starboard chains, and 5 fathoms on the weather side. The sea quickly getting up, the ship soon bilged, and the crew, having no arms to protect themselves against the natives, abandoned her, and proceeded to Gaspar Island, from whence, after remaining there four days, they were taken to Singapore."

The above bearings place the rock about $2\frac{1}{2}$ miles W.N.W. from the north point of Leat, and therefore three-quarters of a mile outside of the outer patch shown in the survey of Captain D. Ross. It is much to be desired that its real position should be decided, and in the meantime we recommend all vessels to give it a berth of at least $2\frac{1}{2}$ miles, or not to bring Jelaka to the southward of S. $\frac{1}{2}$ E. till the N. point of Leat bears to the southward of E.S.E.

H. O. *Nov.* 1851.

620. Lepar Island forms the western side of the channel ; its S.E. angle, called Entrance Point, is hilly, and surrounded by a reef on which there is an islet. To the southward of it lie many banks, which, as well as the point itself, have been already described in Articles 609—615. *Lepar Island.*

621. The S.E. extremity of Banca, called Baginda Point, lies W.S.W. from Entrance Point. *Baginda Point.*

Its N.E. angle, or Klippige Point, bears S. b. W. $\frac{1}{2}$ W. from the Peak of Gaspar, and shoots out various reefs as far as 3 or 4 miles from the shore, with channels between them, 8 to 10 fathoms deep ; some parts of the reefs show above water. *Klippige Point.*

622. Vessels in want of water may anchor N.E. of Entrance Point, and procure water from rivulets which issue about 2 miles north from that point. Captain D. Ross remarks that the water there had a reddish colour, but produced no injurious effect on the crew. But precaution must be taken against pirates, who often hide themselves there. *Water.*

Between Banca and Lepar there is a channel, but so crowded with small islands and reefs as to be available only to small craft, although there are in some parts 8 to 10 fathoms. *Lepar Channel.*

The great bay formed by the eastern side of Banca as far as Brekat Point is sometimes visited by coasters, especially the river Medang, of which, however, little is known. N.W. b. W. from Klippige Point there is an island, with a high hill ; and some log-books mention three islands in this bay, but in the chart of Gaspar Strait, by Captain D. Ross, there is only one shown. *Brekat Bay.*

623. Discovery Rock, on which a Portuguese vessel of Macao was wrecked in 1816, and from which the Alnwick Castle, in 1810, had narrowly escaped by tacking on its edge, in 5$\frac{3}{4}$ fathoms, was imperfectly known till surveyed by Captain Ross in January 1813. It seems to be the same rock upon which the Warren Hastings touched in May 1788, having sounded in 15 fathoms, the next only 4 fathoms, and then 9$\frac{1}{2}$. She anchored immediately with the following bearings : the extremities of a large island near Billiton (probably Leat) N.E. b. E. and E. $\frac{1}{2}$ S. ; a small island E. b. S. ; another S.E. b. E. $\frac{3}{4}$ E. ; Entrance Point S.S.W. ; another point of Lepar Island S.W. b. S. ; a group of rocks S. b. W. $\frac{1}{2}$ W. ; and the N. point of the island in the bay to the northward of Lepar N.W. b. W. $\frac{1}{2}$ W. *Discovery Rock.*

Captain Ross gives the following description of it :—" I once before passed very near the situation of this rock, without perceiving any indication of danger, but while passing at this time, I observed a breaker (it was low water and spring tide), which on examination was found to be on a sunken coral rock, in diameter about 30 yards, having only 2 feet water upon it, and with perpendicular sides, as within a boat's length of it there were 7 fathoms water. Notwithstanding it had only 2 feet water, the sea did not break upon it above once an hour. In the vicinity of the rock the depth is 20 fathoms, but a rocky bank or ridge projects from it about a quarter of a mile to the eastward, with 6, 7, 10, and 15 fathoms on its eastern extremity. From the rock Entrance Point bore S. b. W. $\frac{1}{2}$ W., a rocky point S.S.W., Saddle Island S.E. b. E. $\frac{1}{4}$ E., the south point of Leat Island E. $\frac{3}{4}$ S. nearly, the highest clump of trees upon that island E., its north point N.E. b. E. $\frac{1}{4}$ E., the hummock on Brekat Point N. b. W. $\frac{3}{4}$ W., and lying 4 miles from Jelaka Island, and the same distance from Klippige Point."

Sandy Island.

S.E. from Leat there are a few small islands which derive their names from their mutual position and appearance. Sandy Island lies S. b. E. $\frac{1}{4}$ E., 5 miles from the S.E. point of Leat; very small and low. One mile and a half E. b. N. from Sandy Island lies Barn Island; E. $\frac{1}{2}$ S. 6 miles from the latter, South Island; and 2 miles north of the latter North Island. Table Island lies in 3° 0′ S., and 2 miles E. $\frac{1}{2}$ S. from South Island. Saddle Island, which has two hills, lies $1\frac{1}{2}$ miles S.E. from Barn Island, and 4 miles from South Island, and Low Island lies 1 mile W.S.W. from Saddle Island.

Barn Island. South, North, Table, and Saddle Islands.

Embleton Island.

624. Embleton or Shoalwater Island, in 3° 20′ S., and 21 miles S. $\frac{1}{4}$ W. from South Island, is surrounded by a reef, and many other banks and reefs, some of which are dry, and some only break. They extend from it in a southerly direction. In 1819 the Dunira passed within 100 yards of one of the patches, with the island bearing N.N.E.

Embleton Bank.

625. Embleton Bank was discovered in July 1833, by Captain J. Spratly, on board the York. It is a hard sand of considerable extent, and lies, by bearings taken with an azimuth compass, N.W. $\frac{1}{2}$ N. 3 miles from Embleton Island, and S. $\frac{1}{4}$ E. from the peak of Saddle Island. Close to its western side there are 10 fathoms, and the passage between it and the island ap-

peared to be deep. There is yet another danger 2 miles north of the island.*

626. Entering Macclesfield Channel from the southward, steer towards the S.E. point of Lepar Island, to avoid Fairlie and Blas rocks, taking care to have Embleton Island, from the deck of even a large vessel, below the horizon on the bearing of N.E. b. E., on account of Fairlie Rock, and do not bring Entrance Point to the westward of north till that island bears E. ½ S. Being then past Blas Rock, steer N. b. E. and N.N.E., keeping Entrance Point to the westward of N. ½ W. or N. b. W., and when arrived at 8 or 10 miles to the southward of that point, keep the highest trees on Klippige Point open to the eastward of Entrance Point, which will lead clear of the 2½-fathoms and 3-fathoms banks. *Macclesfield Channel, from the southward.*

To avoid the Vansittart Shoals, with a contrary wind do not bring Entrance Point more to the westward than N.W. ½ N. before the peak of Saddle Island bears N.E. b. E., or rather keep Leat Island a little to the eastward of north. When near the N.W. part of these shoals, the W. end of Leat may be brought N. ½ W., but not more westerly until South Island is open to the northward of Low and Saddle Islands. The northern extremities of these two islands, and the south part of South Island in one E.N.E. ¼ E., just clear the northern part of the shoals. *Vansittart Shoals.*

Horsburgh places the S.E. extremity of the Vansittart Shoals S. ⅓ W. from Barn Island, and N.W. b. N. from Embleton Island. Captain Ross lays it down a mile more to the S.W., that is S. ¾ W. from Barn Island, and N.W. ¾ N. from Embleton Island. The S.W. extremity of these shoals, which Horsburgh places S.S.W. ⅓ W. from Barn Island, and N.W. ¼ W. from Embleton Island, is laid down by Ross S.S.W. ½ W. from the former.

Having entered the Macclesfield Channel between Entrance Point and the Vansittart Shoals, steer towards Jelaka Island, keeping Entrance Point to the westward of S.W. b. S. till the south point of Leat bears east, to avoid the dangers off Lepar;

* In 1848, H.N.M. schooner Aruba, sighted Embleton Island, which had the appearance of two separate islands, one apparently larger than the other. It was high water at the time, and Embleton Bank was entirely covered, but a heavy surf was breaking over it.

and then keep along Leat and Jelaka at the distance of about 2, but not more than $2\frac{1}{2}$, miles, but minding not to bring Entrance Point to the southward of S.S.W. till Jelaka bears east, when the Discovery Rock will have been passed.

To avoid the reefs near the north point of Leat, the west point of Jelaka must not be brought to the westward of S. $\frac{3}{4}$ W. before that north point of Leat is passed at least 3 miles.

Brekat Point. Brekat Point, the easternmost extremity of Banca, on which there is a hummock, in 2° 35′ S., and about 106° 53′ E., may be passed within 2 miles.

Wilson Bank. 627. About 4 miles S. b. E. $\frac{1}{2}$ E. from Brekat Point lies a bank with 3 fathoms on it, which was discovered by Captain Lestock Wilson, of the Carnatic, in February 1787. At 7 P.M., when preparing to anchor, the depth decreased suddenly from 20 to 15 fathoms, and, anchoring immediately, he had only $8\frac{1}{2}$ fathoms, muddy bottom. Gaspar Island at that time bore N.E. $\frac{3}{4}$ N., Tree Island just visible from the deck, N.N.E. $\frac{1}{4}$ E., Brekat Point N.N.W. $\frac{1}{2}$ W., Klippige Point S. $\frac{1}{2}$ E., and the W. point of Leat S.S.E. $\frac{1}{2}$ E. In the boat the shoalest spot found had $3\frac{1}{2}$ fathoms at half a mile S. $\frac{1}{2}$ W. from the vessel; at 3 miles W.S.W. 4 fathoms, W.N.W. not less than $7\frac{1}{2}$ and S. b. E. $\frac{1}{2}$ E. 13 to 16 fathoms.

Gaspar Island. 628. Gaspar Island has a high peak, which is visible at 10 leagues distant, and is an excellent mark to point out the dangers in the vicinity of these islands; it lies in 2° 25′ S., and 107° 6′ E.* This island is surrounded by reefs, and the *Glassa Islet.* little rocky islet of Glassa near its western side, when in a line with the peak, bears E. $\frac{1}{2}$ S. In the vicinity there may probably be many dangers yet undiscovered.

Tree Island. 629. Tree Island is a barren rock, with two or three trees, which at a distance give it the appearance of a vessel under sail. Reefs extend to the north and southward of it about half a mile, and a rock as high as a boat lies S.E. about the same distance. The island lies N.E. $\frac{1}{4}$ N. from Brekat Point, and S.W. b. W. $\frac{1}{2}$ W. from the peak of Gaspar. It is visible at 5

* Huddart places it in	. . . .	2	24	30	S.	107	6	0 E.
Capt. D. Ross	„	2	25	0		107	6	45
Horsburgh	„	2	25	30		107	6	0
Capt. Visser	„	2	25	0		..	..	
„ Gische	„	2	24	45		..	..	

leagues distant, and may be approached as near as 2 miles. The boat of the Vansittart landed upon it, and observed between 8 A.M. and 5 P.M. a perpendicular rise of 3 fathoms in the height of the water.*

630. The Canning Rock, on which, in April 1825, the East India Company's ship of that name, commanded by Captain Baylis, struck on returning from China, lies directly in the route of vessels proceeding towards the strait of Gaspar, and therefore is very dangerous, there being a depth of only 3 fathoms on it, with 17 to 20 fathoms close round it. From the spot where she grounded, Gaspar Island bore W. b. S. 10 miles; Brekat Point S.W. b. W. $\frac{3}{4}$ W.; the hummock near that point W.S.W. $\frac{1}{2}$ W.†; the summit of Mendanau Island S.S.E.; and Hoog Island, lying near the latter, S. b. E. $\frac{1}{2}$ E.; the longitude by chronometers being 107° 14′ E. This danger consists of many coral heads, extending N.E. and S.W. about 100 yards, and E. and W. 50 yards. At the place where the Canning grounded the soundings were 9 fathoms under the port fore-chains, 5 under the starboard main chains, 3 under the port main chains, and 4 fathoms at the stern; and 20 yards astern there were 3 fathoms, coral bottom. From the maintop, at a quarter of a mile distant, nothing of it was visible, and as it is greatly in the way of vessels coming from the northward towards the strait, Gaspar Island ought to be made, bearing well to the southward, and should be approached as near as 5 miles, or less when it bears between W. and W.S.W. *Canning Rock.*

631. The Atwick Rock was discovered by Captain Mackoy, in the vessel of that name bound from Singapore to England, in August 1831, at 8½ A.M., at which time she grounded on it, and ascertained it to be in 1° 48′ 30″ S., and by chronometer 12′ E. from Table Island, which island they passed 48 hours after the accident.‡ *Atwick Rock.*

632. The Pratt Rock is laid down in the improved chart of Banca Strait by Horsburgh, stating it to be discovered in 1844. *Pratt Rock.*

* The Malays collect birds' nests on Tree Island.

† There appears some mistake in this bearing, as an angle of three quarters of a point between the bearings of Brekat Point and the hummock, would place the latter considerably inland, instead of near that point.

‡ The position of this rock in the chart of the Strait of Gaspar, by H. L. Osthoff, is in 1° 39′ S., and N.E. by N. 46 miles from Gaspar Island; there is evidently a mistake of 10′ in latitude.

It lies close to the surface of the sea, and is placed in 1° 32′ 45″ S., and 107° 26′ 45″ E. I have heard nothing further about this danger.

Warren Hastings Reef.

633. Warren Hastings Reef extends 2 miles N. b. W. and S. b. E., with 9 feet in some places. On May 1, 1788, at 1.30 A.M., the Warren Hastings, returning from China, grounded upon this reef, having a short time previously had regular soundings from 20 to 22 fathoms. Under the stem there were only 2 feet water, 4 fathoms amidships, and it was found she was on the S.E. projecting point of the reef. The high land of Banca bore S.W. b. W., the most distant visible lands S.S.W., and S.W. b. W. ½ W., the centre of Gaspar Island E.S.E. ¼ E., Tree Island S. b. E. ½ E., the latitude by the sun's meridian altitude being 2° 23′ S. On examining the shoal with the boat, there were in some places 2 and 1½ fathoms. In 1845 the English vessel Gondolier was wrecked on this reef. The French vessel Joseph places it in 2° 21′ S. and 106° 56′ 45″ E., with the centre of Gaspar Island S.E. b. E., Belvidere Rock N.N.E., and the wreck of the Gondolier S.S.W.*

To avoid this reef when passing it to the westward, Tree Island must be kept to the eastward of S.S.E.; but, in order to clear the Columbian Rock, that island must not be brought more to the eastward than S.E. ½ E. when Gaspar Island bears between E. b. S. and E.S.E., or until more than 10 miles to the north-westward of the island. Another mark is to keep to the northward of it till Brekat Point is brought between S. and S. b. W., and not more to the westward when passing along the reef.

Belvidere Shoals.

634. The Belvidere Shoals lie with their S.W. prong N.N.W. ½ W., 11 miles from the peak of Gaspar, and extend 4 miles N.E. They consist of many coral patches, with 6 to 10 feet water, and a black rock above water at their north-eastern extremity. When there is a heavy swell the sea breaks on them, and by day they may easily be avoided by a good look-

* On the 10th of September 1851, the Chrysolite of Liverpool, while working between the Belvidere and Warren Hastings Shoals, after weathering the latter, narrowly escaped striking on a rock which was not laid down in the charts, and which apparently did not carry more than 4 feet water, with these bearings:—Tree Island S. ½ E., Brekat Point, S.S.W. ¼ W., and the centre of Gaspar Island E. b. S.

out, particularly as some of the patches are dry at low water. However, a vessel from New York was wrecked on this reef, and shortly afterwards a Chinese junk. It was probably the breakers on these banks which were observed from on board the Hawk in 1785, bearing N.E. 6 miles, and E. b. N. 3 miles, Gaspar Island S.S.E. $\frac{1}{2}$ E., and part of Banca S.W.; but it is possible that there are other dangers between these banks and Gaspar Island, from the Sullivan having, in December 1784, with Tree Island bearing S. $\frac{1}{2}$ E., Gaspar Island S.E., and the small island of Glassa S.E. b. S., observed breakers W.S.W. 6 miles, and also N. $\frac{1}{2}$ E. 3 miles, which were considered to be about 3 miles north of Gaspar Island.

635. The Magdalen Reef, discovered in November 1806, by Captain J. Cowman, on his voyage from China to New York, in the American vessel Magdalen, is very dangerous in thick weather for vessels from the northward, and bound to the Strait of Gaspar, for when this reef was discovered she was only half a cable's length from it. It was found to consist of two coral rocks, about 80 fathoms in length and 15 fathoms in breadth, with deep water between them. The boat found 11 feet upon them, and at half a cable's length from the shoal 19 to 21 fathoms. It being noon when the reef was seen, the latitude was found to be 1° 56′ 30″ S., and the Peak of Gaspar bore S. b. E. nearly 8 leagues By keeping this peak S. or S. $\frac{1}{2}$ E. the reef may be safely passed to the eastward, but the peak will not be discernible from the shoal unless the weather is clear. *Magdalen Reef.*

In July 1814, Captain Ross searched in vain for this reef; but in his survey of Gaspar Strait, in 1818, he found it, and ascertained its latitude to be 2° 0′ S., and N. $\frac{3}{4}$ W. from Gaspar Island.

636. Another danger was observed in September 1840, by the Catherine, Captain Hall: this vessel anchored at 1 P.M. in 1° 31′ S. and 107° 1′ E., in 18 fathoms water. They observed breakers in a N.N.E. $\frac{1}{2}$ E. direction, at half a mile distant, on a reef which seemed to extend about 3 miles E. b. S. Though the vessel remained at anchor till 5 P.M. it does not appear that any further observations were made. *Catherine Reef.*

637. The Columbian Rock was discovered in April 1845, in the vessel of that name, by Captain G. Wakem, from Sydney *Columbian Rock.*

to Singapore. At dusk the north point of Leat Island bore S.S.E. 12 miles. At 3.30 A.M., shortly after having sounded in 17 fathoms, she touched on a reef, but without being brought up, although the reef had not more than 10 feet water upon it. They anchored immediately with Gaspar Island E. b. S. 16 miles, and Tree Island S.E. b. E. $\frac{1}{4}$ E. 12 miles. The next day the vessel was left in a sinking condition.

Vansittart Rock.

638. The Vansittart Rock in 2° 11′ S. and N.W. b. W. 25 miles from Gaspar Island, consists of coral rocks with 3 to $3\frac{1}{2}$ fathoms water upon them, and the water not at all discoloured. The Vansittart, Captain Lestock Wilson, struck on this shoal, after having nearly completed the survey of part of the Macclesfield Channel, and was with great difficulty run upon a sandy beach of Banca, to save the lives of the crew.

To pass between the Vansittart Rock and Belvidere Shoals, if the Island of Gaspar is visible, keep its peak between S.E. b. S. and S.E. $\frac{1}{2}$ E.; and afterwards steer N.W. b. N and N.N.W., to avoid other dangers which lie nearer to Banca. The dangers N. and N.W. of Gaspar Island are, for the most part, steep-to, and have a depth of 17 to 20 fathoms round and between them; but in their vicinity, under the shore of Banca, the depth decreases to 12 or 14 fathoms. Captain R. Scott states that in the Warren Hastings, after having passed Brekat Point, he kept under the lee of Banca in 11 or 12 fathoms, and continued his course to the northward without any appearance of danger, but a good look-out was kept.

Coast of Banca.

639. From Brekat Point the coast of Banca trends W.N.W. $\frac{1}{2}$ W. 20 miles to Lanka Point, 2 miles to the westward of which is Koba Village. This part of the shore may be approached as near as 4 miles in 7 to 8 fathoms water, as the shoals are not more than 2 or 3 miles from the shore. Near the roadstead of Koba the depth decreases, and the anchorage is in $4\frac{1}{2}$ fathoms, with the mouth of a river S. $\frac{1}{2}$ W., Bocar Island N. $\frac{3}{4}$ E., and Tetawa Island N.W. $\frac{1}{2}$ N. About 16 miles N.W. b. W. from Lanka Point is the large village of Koeraw, from whence the coast trends N.N.W. to the river Marawang, near which stands the village of Pangkal. The mouth of the river is in 2° $4\frac{1}{2}$′ S.

Koeraw Village.

640. Between Koba and the Marawang there are several scattered islands, viz., Panjang Island, lies S.E. b. E. $\frac{1}{4}$ E., 8

miles from the mouth of the river Marawang ; and 2 miles farther to the eastward Badjoer ; Tetawa, 7½ miles S. b. E. ¾ E. of Panjang ; Boear, 7 miles E. ½ S. from Tetawa ; and between it and Panjang, Passir, another small sandy island. The whole space between these islands is a chain of banks, which in many places become dry, and but few of which carry 4 fathoms water. Between this extensive bank and the shore of Banca there is a passage, with 2½ to 3 fathoms, for small vessels, and is much used in communicating between Koba and the Marawang ; but in the middle of it lies the George Rock, from which Panjang Island bears N., Tetawa Island S.E. b. E., and Pojang Point S.W.

641. The Mentawa and Horse Reefs lie E.N.E. 3 miles, and E. b. S. 4 miles from Boear, in 7½ to 8 fathoms water ; and at 6 miles N.E. b. E. from that island there is another bank with only 9 feet water and 8½ fathoms near it. Between these dangers and the Vansittart Rocks there are 8 to 17 fathoms water.* By passing to the westward of the Columbian and Vansittart Rocks, a depth of 12 or 11 fathoms may be safely kept towards Banca till Panjang Island bears W. ; but farther to the northward do not come into less than 16 fathoms, as many dangers exist in 14 fathoms. *Mentawa and Horse Reefs.*

642. The Diederika Shoals, with 3 feet water on them, and 13 to 14 fathoms round them, lie 11 miles N.E. from Panjang Island, and the Roberts Shoal 4½ miles more to the westward in 10 fathoms. Nearer to Panjang there are many reefs with deep water between them, but their exact positions are unknown. *Diederika Shoals.*

643. The Sullivan, on returning from China, in December 1784, and trying to get sight of Banca during thick weather, ran as far in as 13½ fathoms, rocky bottom, and there saw three patches of breakers, one bearing S.S.W. 3 miles; another S.E. b. S. the same distance ; and the third E.N.E. 4 miles. *Sullivan Patches.*

* In May 1847, H.N.M. schooner Aruba, when standing between Boear Island and the Horse and Mentawa Reefs, passed a few cables' lengths to the westward of a reef, having Boear Island W. ½ S. a mile distant. With Boear Island S.S.W. ¾ W. and Passir Island W. ½ N. she again fell in with reefs, but avoided them by keeping N.W. till Boear Island bore S. ½ E., and Passir Island W.S.W. ½ W. The channel had 8 to 8½ fathoms; hence it is very probable that the Mentawa is a more extensive reef than had been supposed.

Between the breakers a few rocks were visible above water. The weather being thick prevented Banca being seen; but it was supposed the rocks were in 2° 3′ S. and north from Panjang Island.

General Elliot Reefs.

644. The General Elliot found herself entangled among some reefs, with Panjang Island bearing S. b. W. $\frac{1}{4}$ W. 5 miles, and a point of Banca, being the eastern foot of the hill south of Koba S.S.E. $\frac{1}{2}$ E., then being in 8 fathoms. More to the northward, this same vessel ran over some 7 fathoms banks with probably shoaler spots; they lie in 1° 55′ S., 12 miles from Banca.

Hillsborough Rock.

645. The Hillsborough, in March 1788, returning from China and steering for the strait of Gaspar, struck on a rock having 3 feet water on its shoalest part, and while the bow was aground there were 13 fathoms under the stern. When the vessel floated, she anchored in 14 fathoms to the westward of the rock, with the extremities of Banca N.N.W. and S.E., five small islands about S., and in about 2° 3′ S.; the reef extended S.E. and N.E. from the vessel.

Palmer Reef.

646. Of Palmer Reef, the following description is given by Captain George Palmer of the Boddam :—

"August 27th, 1811, at 0 h. 45 m. P.M., the vessel suddenly struck, having 5 minutes previously had 14 fathoms; and then passed rapidly over the reef into 10 fathoms. The next casts were 11, 10, 11, fathoms successively, and we then anchored, the breeze blowing fresh from S.E. When at anchor, Raya Point bore W.N.W. 15 miles; the southernmost of the low islands near Panjang Island S.S.W. $\frac{3}{4}$ W. 12 or 14 miles; and, according to the log, $2\frac{1}{2}$ miles S.S.W. from the spot where the vessel struck."

All these dangers may be avoided by keeping in not less than 16 fathoms, where there is generally a muddy bottom, whereas in 15 fathoms it generally becomes rocky.

Raya Point.

647. Raya Point is distinguished by two hills, and lies in 1° 53′ S. From its S.E. and S. sides an extensive reef projects, which makes it necessary to keep 6 or 8 miles in the offing.

Tate Rocks.

648. Tate Rocks, 4 miles S.S.E. from Raya Point, are above water, and as high as 14 feet. There are other shoals lying in 6 or 7 fathoms, extending S.E. b. S. 8 miles; and E.N.E. 4 miles from the point there is another patch with 5 fathoms on it.

To avoid these dangers keep Panjang Island to the westward of south, and go no nearer the shore of Banca than 7 fathoms water, when approaching the harbour of Pangkal.

649. Vessels from Macclesfield Channel, and bound to the ports of Pangkal, Marawang, or Roessah, pass between Tree Island and Brekat Point, and to the westward of the Columbian and Vansittart Rocks, in 12 to 14 fathoms water, but in not a greater depth (as the Columbian lies in the stream of 17 fathoms) till Boear Island bears S.W. b. S., and Panjang Island W.; a depth of 16 fathoms must then be kept till Raya Point bears west. From thence steer direct for that point till in 7 or 8 fathoms, having Panjang Island S. $\frac{1}{4}$ W., on which bearing the island may be approached till the N.W. peak of the Lappa Hills bears S.W. $\frac{1}{2}$ W., which course leads direct to the anchorage. *Marawang Road.*

Horsburgh gives the following directions, which were furnished to him by a navigator of local experience. When bound to the road of Marawang, approach Raya Point till in 7 fathoms, and the Blusor Rock, which will be visible from the deck 5 miles (probably the Tate Rocks), till in 5 or 7 fathoms and at $1\frac{1}{2}$ miles distant. When to the southward of the rock keep off shore, but not into a greater depth than 10 or 11 fathoms, and, if clear, Panjang and Badjoer will be visible. Bring the extremities of these islands south, and keep them on that bearing till the north-western peak of the Lappa Hills bears S.W. $\frac{1}{2}$ W.; then steer direct for it, till Tetawa Island is open to the westward of Panjang Island, and till the western point of the latter island bears S.E. b. S. The anchorage is in $4\frac{1}{2}$ fathoms, with the mouth of the river W. $\frac{1}{2}$ N., and a range of rocks which are partly dry S.E. b. S. 4 miles distant.

H.N.M. schooner Windhond anchored in the above road in $3\frac{1}{4}$ fathoms, with the elbow near Raya Point N. b. W., Marass Mountain N.W. b. W. $\frac{1}{2}$ W., the N. point of the river W., Lappa Hills S.W. $\frac{1}{4}$ S., Tetawa Island in one with Koba Village S.E. b. S., the high trees of Panjang Island S.E. $\frac{1}{4}$ S., and Badjoer Island S.E. $\frac{3}{4}$ E. By not bringing the south point of the river to the northward of west a vessel will avoid the rocks which lie a mile S.E. from the anchorage.

650. The bay of Liat, to the northward of Raya Point, affords good shelter from S. and W. winds; but during the *Liat Bay and Anchorages.*

eastern monsoon the swell is very heavy. Proceeding towards
Leang Reef. the anchorage, it will be necessary to avoid a reef with only 6 feet water, from the northern extremity of which the north point of the river Liat is in one with the southern peak of Marass Mountain W. $\frac{3}{4}$ S., and Raya Point S. $\frac{3}{4}$ E.; close to the reef there are 6 or 7 fathoms.

Circe Reef. 651. A 4-fathoms reef lies S.E. b. S. from Liat Point; and E. $\frac{1}{4}$ N. from the river there is another reef, with $2\frac{1}{2}$ fathoms water upon it and 6 or 7 fathoms round it, from which the hill on Liat Point bears W.N.W. $\frac{1}{2}$ W., Simbang Island N.W. $\frac{1}{4}$ W., and the hill on Raya Point S.W. $\frac{3}{4}$ S. This reef was discovered by H.N.M. schooner Circe.

On coming from the northward, $5\frac{1}{2}$ or 6 fathoms will be found at 2 miles from Liat Point, and in a southerly direction towards the anchorage, which is in $4\frac{1}{4}$ fathoms, with the river W. a little northerly, Liat Point N.N.W. $\frac{1}{2}$ W., and Raya Point S.E. b. S.

When coming from the eastward, and being in 10 or 11 fathoms, bring Raya Point S.W. b. W., and keep towards that point till Liat Point bears N.W. b. W. $\frac{1}{2}$ W., and from thence steer W.N.W. and W. b. N. towards the anchorage. Fresh water here is very difficult to be procured, on account of the rocks in the mouth of the river, which can only be entered at high water, when these rocks are under water; but then there is a heavy surf on them, that places the boats in danger of being upset, which happened in July 1834, to a boat of H.N.M. brig Meermin. Wood and spars of any dimensions may easily be obtained on the south side of the bay, within half a mile of the shore. From the river, nearly to the S.E. point of the bay, a fine sandy beach lines the shore, with gradually decreasing soundings.

Tides. 652. At full and change it is high water at 5 P.M., and the rise of tide is 9 feet.

Toan Point. 653. Toan Point, in 1° 36′ S., has a hill on it, and there are several hills farther inland. Close to the point lies the small island Pongoh, which can be approached as near as half a mile; but the bay to the southward of it, in which lies Simbang Island, is very shallow. The shore to the northward of Raya Point may be approached to 13 fathoms, and even less.

Severn Shoal 654. The Severn Shoal, discovered in May 1802, by Captain

J. Whetton, of the American ship Severn, from New York, lies exactly in the track of vessels from Toty Island towards Gaspar Strait. At sunset Gaspar Peak bore S.E. $\frac{3}{4}$ S., 14 miles distant. From this situation she steered N.W. $\frac{1}{2}$ N. 35 miles, and at daybreak struck on a coral reef, but got off after being lightened of 30 tons of ballast. The reef seemed to extend 2 or 3 miles N.N.E. and S.S.W., but where the vessel grounded there were 10 feet water, and the latitude 1° 40′ S. The hills on Banca had the appearance of separate islands, above which the Marass Mountain was visible, and the nearest land was computed to be about 7 leagues distant. The Columbian, of New York, was wrecked on this shoal in March 1824, when returning from China. The crew reached the harbour of Minto in the long-boat, after having suffered much from deprivation and fatigue.

655. The Vega Shoal was discovered in September 1826, by Captain Jose Antonio de Vega, of the Spanish frigate Vellos, which ship struck on it on her way to Manilla, but got off. Its extent is not more than a ship's length, with a depth of 18 to 21 feet, and round it 9, 11, 17, and 22 fathoms. Captain de Vega placed it in 1° 10′ S., and in longitude 106° 34′ E., by chronometers regulated the day previously at Gaspar Island, from which island he considered the shoal to bear N. b. W. $\frac{3}{4}$ W. 81 miles. *Vega Shoal.*

656. In May 1830, the barque Marquis of Hastings, coming from Banca Strait and bound to Sambas, grounded upon this bank. The Captain (Ingram) placed it in 1° 6′ S., and 106° 31′ 30″ E. by chronometers, and therefore about N.E. $\frac{1}{2}$ N., 60 miles from the Marass Mountain. It extends about three ships' lengths N.W. and S.E., a ship's length wide, and has 9 feet water on its shoalest part. At a ship's length from it they had 20 fathoms, and close to it 12, 10, and 5 fathoms. *Hastings Bank.*

Horsburgh says, that Captain Ingram, of the Marquis of Hastings, discovered this bank April 28, 1832, and that Mr. Harris laid it down at the same time in 1° 4′ S. and 106° 37′ E. If so, this must have been the second time that Captain Ingram fell in with this bank, and having mentioned it the first time at Batavia, it is strange that he should have again given it as a new discovery. Probably Horsburgh has made some mistake in the dates.

It is far from improbable that the Vega and Hastings banks are the same, but great attention will be required when in their vicinity.

657. Vessels bound to the strait of Rhio from Gaspar Strait, having reached the latitude of Raya Point, or 1° 50′ S., should approach the Banca shore to 15 or 13 fathoms, and pass between Toejo and Docan Islands towards Taya Island. But if going to China it is better to keep close to the eastward of Gaspar Island, keeping the peak to the westward of south till it sinks below the horizon, or till past the parallel of the Magdalen Reef.

CHAPTER V.

Gaspar Strait, Clements and Stolze Channels.

658. The Middle Pass, between Sandy and Leat Islands, unites the Macclesfield and Clements Channels. Formerly this latter channel was often used, but the preference seems now to be given to the Macclesfield. *Middle Pass.*

Vessels from the S.W. pass between Entrance Point and the Vansittart Shoals towards Sandy Island, between which and Leat Island there is a clear channel; but to the northward of Barn Island there are two shoals with deep water between them; and the best passage is to the southward and eastward of them both. To effect this, Sandy Island must be passed to the northward, and brought, when at 2 miles from it, to bear S.W. b. S., on which bearing it must be kept, and not more to the southward, in order to clear the southern shoal, which is easily distinguished by the colour of the water, and at low water it dries. After having passed this shoal steer north, keeping at least 5 miles off Leat Island, when, in clear weather, Gaspar Island will be seen bearing N. b. W., and must be passed at 2 or 3 miles distant, but not more than 5 or 6 miles. As long as Gaspar Island is visible, or rather till the vessel arrives in 1° 50′ S., it must be kept south or a little westerly, in order to pass to the eastward of the Belvidere and Magdalen Reefs.

659. Clements Channel is more difficult and dangerous than the Macclesfield. When coming from the southward with a S.E. wind, a vessel may pass to the westward of Embleton Island and of the shoals near it, but giving it a berth of 3 or 4 miles. When they are passed, steer to the eastward of north till the peak of Saddle Island bears N. b. E., in order to avoid the south-eastern extremity of the Vansittart Shoals; and then pass between Saddle and South Islands so as to clear the dry reef, which lies 1¼ miles N.E. b. E. from Saddle Island. *Clements Channel.*

660. Between the north-eastern prong of the Vansittart

Shoals and Low Island there is a pass 2 miles wide, which leads into Macclesfield Channel, and which may be used by keeping a mile to the southward of the island, and bringing Sandy Island N. b. W. before the south point of Saddle Island comes in one with the N. point of South Island; there being two small shoals in this interval, from which the W. point of Sandy Island is in one with the western hill on Leat Island; but recollect that this passage between the banks and Low Island is very narrow.

Sunk Rock. 661. To proceed through Clements Channel, after having passed between South and Saddle Islands, steer N.N.W., but passing closer to Barn Island than to North Island, to avoid a sunken rock of 8 fathoms only in diameter, with 9 feet water, and round it 10 fathoms; the marks for it are—Saddle Island S. b. W. $\frac{1}{4}$ W. $4\frac{3}{4}$ miles; North Island E. b. N. $2\frac{1}{4}$ miles; Barn Island W. b. S. $3\frac{1}{4}$ miles; a reef near Saddle Island south, the centre of Table Island, and the north point of South Island being in one, and Sandy Island entirely hidden by Barn Island. Having passed this narrow place, and having North Island E. or E. b. S. 3 or $3\frac{1}{2}$ miles, a northerly course may be taken to pass to the eastward of Gaspar Island; but attention must be paid in order to avoid the following dangers.

Hewitt Rock. 662. The Hewitt Rock, on which, in August 1820, the General Hewitt struck, and remained fast for half an hour, extends about a ship's length, and is 8 or 10 fathoms in breadth; the coral rocks were visible under the vessel with only 14 feet water, and near the rock 12 to 15 fathoms. When aground, the western points of South Island and of North Island were in one; Leat Island from W.N.W. to W. b. S.; Barn Island S.W. b. S.; and the hill on Brekat Point open outside of the N. end of Leat Island. This danger lies 5 miles from North Island, and may be avoided by keeping the high part of South Island open either E. or W. of North Island.

Stolze Channel. 663. When prevented by circumstances from taking the Macclesfield Channel, or if bound to Borneo, or going from Batavia to the northward, the Stolze is preferable to the Clements Channel as well for safety as for shortening the voyage.

Along the western coast of Billiton there are numerous islands, separated by narrow and mostly unnavigable passages.

Selio Island. 664. Selio is a pretty large island, surrounded by a wide reef,

and separated from the S.W. point of Billiton by a narrow channel, in the middle of which lies the small island of Saribo, and a mile S.E. from it a reef which partly dries. Close to Billiton are the small islands Gonting and Proet; and a shoal N.E. three-quarters of a mile from Saribo. At 2 miles W. from both the N. and S. points of Selio there are two separate shoals, on the southernmost of which stands a white rock, 28 feet above water; the other is a dry sand-bank, called Koerier Bank, after the vessel employed in the survey. The S. point of Selio lies in 3° 15′ 30″ S. and 107° 35′ 4″ E., or 16′ 40″ E. from Table Island. *Saribo.* *Gonting.* *Koerier Bank.*

665. Aanvang Bank, discovered in 1822 by Lieut. J. Stolze, is 5 cables in length, and consists of large black rocks, with 9 to 4½ feet on them, close to them 3½ to 5 fathoms, and at a little distance 22 fathoms. From its S.E. prong, the south point of Selio bears N. 35° W. 10 miles, and Blantoe Hill N. b. E.; and from its S.W. prong the south point of Selio bears N. 32° W., and Blantoe Hill N. b. E. ⅓ E.; its latitude being 3° 23′ 35″ S. This is probably the reef which Captain Clayton saw during his voyage from Sourabaya to Singapore, in the Camden. In July 1833, intending to proceed through Clements Channel, and to sight Shoe Island, he steered N.W. to pass between Embleton and Low Islands. At 6 30 P.M. Shoe Island bore S.E. b. E., and some others, which he called the Lestock Islands, N.N.W. At 8 P.M. he shortened sail, and hove-to. On making sail at daybreak, and having the Lestock Islands N.E. b. E. 6 miles, he observed a reef near the vessel, about 3 cables in length, with black rocks in its centre. He laid it down, according to the position given to Embleton Island, in 3° 26′ S. and 107° 36′ E. *Aanvang Bank.*

A little to the northward of Tamelang Point, on the S.W. side of Billiton, there is a small rivulet of good water, which may be easily approached by boats. *Water.*

666. The large bay to the northward of Selio, and eastward of the Six Islands, is crowded with small islands and reefs, most of which, as far as Roe Point, dry at low water, and the pilots who were accustomed to these shores refused to go in there even with the boats.

667. The Six Islands, called Poulo Lima by the natives, *Six Islands.*

are very low, and surrounded by reefs, between which there are narrow passages from 11 to 15 fathoms deep. To the southernmost of these islands the name of Ross has been given by the Dutch, in honour of that clever seaman ; it lies in 3° 6′ S. and 6′ 24″ east of Table Island. They may be approached to the westward and southward as near as 2 or 3 miles, and all dangers are avoided by keeping the west point of Long Island a little to the eastward of north.

Long Island, or Mendanau.

668. Long Island, or Mendanau, is large but for the most part low ; its west point is in 2° 51′ 15″ S. and 5′ E. of Table Island. About S. b. E. from this point lies Ayam Islet, and north from it, Hoog Islet, resembling a sugar loaf.

Dinding.

To the northward of Mendanau lie Dinding and Rotterdam Islands, with narrow passages between them ; off its N.E. point

Hoorn and Gala Isles.

Hoorn Island, connected to it by a reef, and on its E. and S. sides Vogel La and Gala Islands, with navigable channels between them.

Nassie Channel.

669. Nassie Channel, between Mendanau and Dinding, is navigable for small vessels only, as there is a kind of bar in it of 1 or 2 fathoms water ; in the rest of the channel there are 5 to 9 fathoms.

Nado Pass.

670. Nado Pass, between Mendanau and Gala Islands, is entirely clear, and very deep. At its north entrance, close to Mendanau, there are however two rocks, which dry at low

La Pass.

water. The pass between Mendanau and La is obstructed by a rock in the middle of its south entrance, and by a few others near the S.E. point of Hoorn ; but the pass between La and Ratten Islands, which last lies on the edge of the reef off Billiton, is entirely clear.

Stolze Channel.

671. If intending to go through Stolze Channel, it is advisable to sight Selio Island, bearing N. or N.N.W., and to make out the white rock, which lies to the westward of it ; and at night it should be so managed that the meridian of that island may be reached before arriving in the parallel of Aanvang Bank.

N.N.W. or N.W. b. N. may then be steered (the Six Islands as well as Table Island may be approached as near as 2 miles, and the former even to 1 mile), till near Table Island, and then north, minding to keep the W. point of Mendanau to the east-

ward of north, and the highest part of South Island open of the east point of North Island, in order to avoid the reefs off Six Islands, Mendanau, and the General Hewitt Rock.

Having passed the west point of Mendanau, at 2 miles distant, keep N. or N. b. E. till Rotterdam Island, or the N.W. point of Dinding bears S.S.E., then steer N.E. b. E., E.N.E., or E. b. N., till the island Kalmoa, which lies at the mouth of the river Tieroti, bears S.E. b. E.; steer then direct for that island till Kalmanbang Island bears S.S.W. $\frac{3}{4}$ W., and anchor in $7\frac{1}{2}$ fathoms with the mouth of the river S.E. b. E. $\frac{1}{2}$ E., 4 miles distant, and the nearest rocks S.E. $\frac{3}{4}$ E., 3 miles.

672. When near the N.W. point of Dinding, the wind sometimes flies round to the eastward; and if bound to the bay of Tieroti, it is better to anchor, and wait for the sea breeze from the S. or S.W., as the current runs N.W. with an easterly wind. The bay of Tieroti affords no safe anchorage in the N.W. monsoon, and even during the N.E. monsoon there are heavy gales from the N.W. It is advisable to lay the kedge out to the northward, as the vessels often foul their anchors, either by the currents or winds. The water, which is fetched from a little way up the river, is very good; it may be procured also on the right bank of the river, near the entrance, but it is not so good. *Tieroti Bay.*

673. If going to the southward, and the opportunity favourable, the Nado passage may be used, passing to the westward of Kalmanbang, and between La and Ratten Islands; but in this route you must avoid, in the first place, a reef with only 6 feet water to the northward of Kalmanbang, and a bank of $2\frac{1}{2}$ fathoms, bearing N. b. W. $\frac{1}{2}$ W., from the E. point of Hoorn Island, and W. $\frac{3}{4}$ S. from Kalmanbang. By keeping a south course between this last shoal and Kalmanbang, towards the E. point of Hoorn, there will be found not less than 10 fathoms water; and on entering the Pass of Nado, keep close to the reef off Vogel Island, then run in the middle of the strait, and having cleared it, pass to the westward of the Six Islands. *Nado Pass.*

674. Coming from the southward, and not intending to anchor at Tieroti, it is better, after having brought Table Island west 2 miles distant, to steer N. b. W., or N.N.W., in order to pass near to the eastward of Gaspar Island, but taking good care to avoid the Hewitt Rock (Art. 662), keeping close to *Stolze Channel.*

the northward of North Island, and passing to the westward of that rock.

Northern Monsoon in the Strait of Gaspar.

During the northern monsoon, it is very difficult, almost impossible, to work through this strait, even in the latter part of the monsoon, about March, when vessels are obliged to anchor often on account of the faintness of the wind and the rapidity of the southerly current.

675. Vessels returning from Singapore or China early in the northern monsoon, and intending to go through the strait of Gaspar, prefer the western branch, or Macclesfield Channel, passing between Toty and Docan Islands; but it is better to go 12 or 14 miles to the eastward of the latter, and even more, when the wind is easterly; but early in the monsoon the wind is generally N. or N.W.

Having passed Toty Island, steer E.S.E., so as to get in the meridian of Gaspar Island before reaching the parallel of 1° 50′ S., which course will lead to the eastward of the Magdalen and Belvidere Reefs. Pass close either to the eastward or westward of Gaspar Island, and steer S.W. Avoid the Alceste Rock, and pass Jelaka at 1½ but not more than 2 miles distant, on account of the Discovery Rock. At that time of the year, strong S.E. currents prevail between Gaspar and Leat Islands, for which allowance must be made, so as not to come too near the Alceste Rock; the N.W. part of Leat should not be approached within 5 miles till Jelaka Islet is brought to the eastward of south. These directions apply only to vessels returning from China early in the monsoon, for during N.W. winds the strait of Banca is to be preferred. In general, and especially returning late in the monsoon from China, when S.E. and easterly winds are often met with between Banca and Billiton, it will be better to go 3 or 4 leagues to the westward of St. Barbe Island, and endeavour as soon as possible to get into the meridian of Gaspar Island, but not to the westward of it when in the parallel of the Magdalen Reef, which should never be passed at night, as Gaspar Island is in clear weather the only mark by which it may be avoided. When Gaspar island is seen bearing between S. and S.S.W., a vessel should pass within 2 miles of it to the eastward, or even nearer, to avoid the Canning Rock, and to prevent the strength of the current setting her towards the Alceste Rock, and the other

dangers under the lee of Leat. When near the Belvidere Shoals, a good look-out must be kept in clear weather for them; and when Gaspar Island bears S., the rock at their northern extremity and some dry spots may be seen, which will serve as a guide to prevent her from going too far to the eastward.

Macclesfield Channel.

676. Vessels returning by the Macclesfield Channel ought to keep on its E. side, in order to clear the 2½-fathoms bank; and for that purpose the W. point of Leat must be brought between N. and N. b. E. ½ E., so as to pass between the Vansittart Shoals and those to the southward of Lepar Island. Entrance Point must then be kept between N. ½ W. and N.W. b. N., according to the wind, until 10 miles to the southward of that point. With N.W. winds, a course may be steered for the Two Brothers; but in case the wind is E., or N.E., it is better to make the Northwatcher. In this case, steer S. b. W., so as to bring Entrance Point N. before the parallel of Embleton Island is reached, to avoid the Blas Rock; and when that island bears N.E. b. E., it should, from the deck of a large vessel, be sunk below the horizon, in order to avoid the Fairlie Rock, and Entrance Point must not be brought more to the westward than N. b. W., as the rock lies 8 leagues S. b. E. ½ E. from it (see Art. 613.)

Soundings in Macclesfield Channel.

677. The soundings in the strait are generally 17 to 18 fathoms in the middle, increasing towards Jelaka Island to 24 or 28, and decreasing from thence to 11 and 12 fathoms. Towards Entrance Point the bottom in many places is mud, but often coarse sand with shells and stones, and in some places rock, particularly in the vicinity of the shoals on the Banca shore. At three-quarters of a mile to the westward of Jelaka, there are also rocks with only a fathom water on them, to avoid which the island should not be approached nearer than 1½ miles.

Returning late in Monsoon, by Stolze Channel.

678. Returning from China late in the monsoon, S.S.W. winds are often met in the southern part of the China Sea, and oblige vessels to pass between the islands near the west coast of Borneo. If this should happen in May or June, it would be very tedious to get to the southward; in such case, steer for the N.W. end of Billiton, and pass through the Clements, or rather through Stolze Channel.

The outermost of the small islands on the N.W. end of

Billiton lies in about 2° 28′, or, according to Horsburgh, 2° 35′ S., and in 107° 43′ E. On approaching the N.W. end of Billiton, which is visible 8 leagues distant, keep 4 miles from the group of islands near it, and steer S.W. at the same distance along Dinding and Rotterdam, then S.S.W. till near North Island, to avoid the Hewitt Rock; to effect this, Mendanau Island must not be passed farther to the westward than to have the highest part of South Island open of the E. point of North Island.

679. When proceeding through Clements Channel, pass only a mile to the westward of North Island, to avoid the Sunk Rock, which lies 2½ miles W. b. S. from that island, and afterwards keep in mid-channel between South Island and Saddle Island. Having passed them, continue a south course, being careful not to bring Saddle Island to the eastward of N. b. E. until 10 or 11 miles to the southward of it, in order to avoid the S.E. extremity of the Vansittart Shoals. You may then haul out to the westward, but so as to give Embleton Island and Bank a wide berth, and the dangers thereabouts, leaving them, with the Blas and Fairlie Rocks to the S.E., and steer for the Two Brothers or the Northwatcher. In case of southerly winds, Stolze Channel is to be preferred, because it is sufficiently wide as far as the Six Islands, and pass afterwards between the Vansittart Shoals and Embleton Banks.

If going to the Eastward.

680. Being bound to Batavia, or more to the eastward, keep well to the southward till Selio Island bears about north, having passed at a good distance from Embleton Island and the dangers to the southward of it, as their positions are not laid down accurately, and it being probable that there are other dangers more to the S.E.; Selio Island, however, must not be brought more to the westward than N.N.W. or N.N.W. ½ W., until the parallel of Aanvang Bank is reached.

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